NCTM 2010 ANNUAL MEETING \& EXPOSITION
SAN DIEGO, CA • APRIL 21-24, 2010


See Valuable
GOUPONS in the back
of the program

## PROGRAM BOOK

## 2010 ANNUAL MEETING and EXPOSITION

San Diego, California | April 21-24, 2010 | Connections: Linking Concepts and Context

## HOSTS

Greater San Diego Math Council California Mathematics Council, Southern Section

## MEETING FACILITIES

All Annual Meeting presentations will be held at the San Diego Convention Center, the Manchester Grand Hyatt San Diego, and the San Diego Marriott Hotel and Marina. See pages 168-71 for floor plans.

## REGISTRATION AREA HOURS

Wednesday
Thursday Friday Saturday

8:00 a.m. - 7:00 p.m.
7:00 a.m. - 4:00 p.m.
7:00 a.m. - 4:00 p.m.
7:00 a.m. -10:00 a.m.

## EXHIBITS \& CYBER CAFÉ

Thursday
Friday
Saturday

8:30 a.m. - 5:00 p.m.
8:30 a.m. - 5:00 p.m.
9:00 a.m. -12:00 noon

## BOOKSTORE \& MEMBER SHOWCASE

Wednesday
Thursday
Friday
Saturday

10:00 a.m. - 7:00 p.m.
7:00 a.m. - 5:30 p.m.
7:30 a.m. - 5:30 p.m.
8:30 a.m. -12:00 noon

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NCTM does not sell or distribute member e-mail addresses in compliance with Federal privacy policies. However, 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 www.nctm.org.

## Welcome to San Diego!

Welcome to the largest, most exciting annual gathering of mathematics educators in the world. The 88th Annual Meeting and Exposition of the National Council of Teachers of Mathematics brings together outstanding classroom teachers, mathematics educators, and mathematicians to share what they know and to exchange ideas all in support of helping every student learn challenging mathematics. On behalf of the Board of Directors, Program and Local Arrangements committees, NCTM staff, and the many volunteers who have worked long hours over the past two years to put together an extraordinary set of opportunities for you, welcome to San Diego.
Our conference theme, Connections: Linking Concents and Context, provides just a glimpse of what the conference will offer. Our Program Committee has put together an exceptional group of presentations for you to explore and consider so that you can help all students learn. You will find presentations that challenge you to examine your own teaching within the context of connecting concepts and context, as well as your connec-


Henry S. Kepner, Jr.
President, National Council of Teachers of Mathematics University of WisconsinMilwaukee



Bonnie Hagelberger
Program Chair Monroe Elementary School, Retired
Plymouth, Minnesota
Burner Hogetherqu

Welcome to the Council's 2010 Annual Meeting and Exposition. The NCTM staff and I are delighted that you decided to join us for this wonderful event in sunny Southern California!
The NCTM Annual Meeting is a truly awesome event not only because of its size -we have more than 12,000 students, teachers, and educators attending our conference-but also because of its scope of coverage. This year's meeting is no exception: there are more than 700 presentations to choose from, covering a wide range of topics. There are presentations on such timely topics as the national common core standards, response to intervention strategy, and NCTM's recent publication, Focus in High School Mathematics: Reasoning
lions to your students and their community, and your perspectives on mathematics.
There is much more to the conference than the more than 700 presentations planned for your professional enrichment. Over the next three days, take advantage of the extraordinary opportunities you'll have to meet new colleagues and to form stimulating professional and personal relationships that can last a lifetime. With its idyllic climate, 70 miles of beaches, and a wide variety of attractions, San Diego has something for everyone. Popular attractions include the San Diego Zoo, Sea World, Balboa Park, and Coronado Island. Explore San Diego's charming neighborhoods and experience its vibrant nightlife. Sightseeing tours are available to NCTM attendees and guests through NCTM's shuttle company.
We hope that after your San Diego experiences you will return to your classroom and colleagues full of new ideas and fresh perspectives that will expand your thinking about the mathematics you teach and the students whose lives you influence every day.

and Sense Making. Moreover, you will discover that mathematics is everywhere, even in such unexpected places as origami, the Federalist papers, the NBA draft lottery, opera, and poetry. I am confident that you will grow professionally and have fun in the process.


## Kichoon Yang

Executive Director
National Council of Teachers of Mathematics



The 2010 NCTM Annual Meeting and Exposition officially begins with the Opening Session, starting at 5:30 p.m. on Wednesday, April 21, in Ballroom 20 at the San Diego Convention Center. All other presentations begin at 8:00 a.m. each day and are scheduled concurrently throughout the day on Thursday, Friday, and Saturday.

We have made every attempt to provide adequate seating for participants at the Annual Meeting and Exposition. The room capacity for each presentation is listed on all meeting room signs. For your safety and because of fire regulations, only those with seats will be allowed in meeting rooms. To comply with fire codes, it may be necessary to ask any person sitting on the floor or standing to leave the room.

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.
- As a courtesy to the speakers and your colleagues, please turn off your cell phone during all presentations.


## Professional Development Focus of the Year 2009-2010

## Connections: Linking Concepts and Context

This year's Focus of the Year is Connections: Linking Concepts and Context. This theme will be highlighted at the conference as the topic of Thursday's Learn $\leftrightarrow$ Reflect strand, as well as in many NCTM activities throughout the year. For more information, visit www.nctm.org/focus.

## Learn $\leftrightarrow$ Reflect Strand

Focus one full day on the Focus of the Year topic, Connections: Linking Concepts and Context. The strand begins with a morning Kickoff session and concludes with an end-of-theday Reflection session. In between, you choose from among a number of sessions exploring the topic, all marked with the symbol LSR. Immerse yourself in the topic and collaborate with leaders and colleagues. Participants are asked to reflect on the following questions throughout the Learn $\leftrightarrow$ Reflect strand. At the end of the strand during the Reflection session, participants engage in a discussion based on the following questions.

1. How has your understanding of mathematics connections been changed, challenged, or confirmed?
2. What role do connections play in developing students' insights about and understanding of mathematics?
3. What do you do or what will you do in your instruction to emphasize the interrelatedness of mathematical ideas?
4. How will you create classroom experiences that value and build upon the connections between mathematics and students' prior knowledge, lived experiences, and personal interests?

Learn $\leftrightarrow$ Reflect sessions are open for anyone to attend throughout the day. Personalized certificates will be prepared for those attendees who attend the Kickoff session, at least one Learn $\leftrightarrow$ Reflect session during the day, and the final Reflection session.

## New Teacher Strand

The New Teacher strand offers sessions and gallery workshops designed to answer questions and concerns of new teachers. Presentations are grade-band-specific and include topics from management and motivation, to engaging struggling students, to a celebration of those entering and just beginning their teaching careers. Learn, network with other new teachers, and get your questions answered. Targeted to early career teachers and those working on certification. All are welcome.

Look for this symbol, $\mathbb{N} \mathbb{N} \mathbb{D}$, on Friday, April 23, 2010, for presentations that are part of this strand. Join the New Teacher Kickoff on Thursday at 3:00 p.m.

Visit www.nctm.org/newteacher for more information.

## NCTM Committee Presentations

NCTM committee presentations are identified by the symbol. For a list of all NCTM committees, please visit www.nctm.org.

## Equity Strand

The Equity strand features presentations given by the Benjamin Banneker Association, TODOS: Mathematics for ALL, and Women and Mathematics Education. Presentations are scheduled throughout the conference.

## Mathematical Association Presidents' Series

The Presidents' Series is a feature of the NCTM Annual Meeting program that highlights connections among the mathematical community at different levels. Presentations are scheduled throughout the conference.

## Come, Connect, Communicate

Join your colleagues in informational discussions about the latest trends in education. Held on Friday, these small-group discussions will be led by a facilitator and provide attendees with a place to focus on important issues in the education world.

## Supporting Math and Science Education

## When does $\mathrm{X}+\mathrm{Y}(\mathrm{Z})=$ future CEO? When MathMovesU.



Raytheon believes when students are engaged and inspired by math and science, anything is possible. That's why we created the MathMovesU® national initiative. It takes math and science to fun, exciting and innovative places:
like having kids engineer their own thrills through a new Raytheon experience at INNOVENTIONS at Epcot ${ }^{\bullet}$ at the Walt Disney World ${ }^{\oplus}$ Resort; compete with peers in the Raytheon MATHCOUNTS ${ }^{\ominus}$ National Competition; use math to talk football with the New England Patriots; or explore a range of interactive activities on www.mathmovesu.com. It's all part of our mission to inspire today's students to be tomorrow's leaders.

Visit us at Booth 1053 to learn more and enter to win a $\$ 250$ gift card.

## www.MathMovesU.com

## New Member and First Timers' Orientation

New to NCTM or a first-time attendee? Hear about maximizing your NCTM member experience and get takeaways full of classroom-ready activities with the New Member and First Timers' Orientation. Plus, the sessions will discuss the format of the conference and help attendees make the most of their experience. Our attendees are representative of the United States, Canada, and numerous international locations.

| Wednesday | Thursday |
| :--- | :--- |
| Session \#1 | Session \#3 |
| $4: 00$ p.m.-4:30 p.m. | 7:15 a.m.-7:45 a.m. |
| Room 6 A <br> (Convention Center) | Room 6 A <br> (Convention Center) |

## 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 in not permitted.

| Session (60 minutes) | Rooms are set theatre style <br> and vary in size. |
| :--- | :--- |
| Research Session <br> (60 minutes) | Rooms are set theatre style <br> and vary in size. Research <br> sessions emphasize the <br> connection between <br> research and practice. |
| Gallery Workshop <br> (90 minutes) | Rooms are set with round <br> tables for hands-on work <br> and additional seating <br> around the perimeter of the <br> room. The gallery partici- <br> pants will receive the print <br> material and observe the <br> workshop in a fashion simi- <br> lar to a classroom observer. |
| Exhibitor Workshop <br> (60 minutes) | Rooms are set theatre style <br> for 100 people. Exhibitors <br> showcase their products <br> and services away from |
| the exhibit hall. Look for |  |
| the symbol CW indicating |  |
| Exhibitor Workshops in the |  |
| program book. |  |

## Grade Bands

To assist attendees in finding appropriate presentations to attend, each presentation lists the presentation's target grade band audience. The grade bands are:
Pre-K-2—preschool and prekindergarten through grade 2 Grades 3-5-grades 3 through 5
Grades 6-8-grades 6 through 8
Grades 9-12—grades 9 through 12
Higher Education-university and college level issues including both two-year and four-year institutions
Preservice and In-Service - content and techniques for providers of preservice teacher education and professional development for practicing teachers, supervisors, specialists, coaches and mathematics educators.
General Interest-applicable to all grades and audiences

## On-Site Daily News

Start each morning with the NCTM Daily News, which will include late-breaking news about the 2010 NCTM Annual Meeting and Exposition. Program or speaker changes and cancellations will be listed as well. The Daily News will be distributed in the lobby of the San Diego Convention Center and available in the Manchester Grand Hyatt San Diego and the San Diego Marriott Hotel and Marina.

## Tips for a Rewarding Annual Meeting and Exposition

- Become familiar with the layout of the San Diego Convention Center, Manchester Grand Hyatt San Diego, and San Diego Marriott Hotel and Marina by reviewing the floor plans on pages 168-71.
- Visit the NCTM Bookstore and save 25 percent on all NCTM resources.
- Stop by the Information Booth for information on the local San Diego, California, area.
- If attending the conference with colleagues, attend different presentations and share your learned knowledge after the conference.
- Wear comfortable shoes and clothes, and dress in layers.
- Turn off cell phones and pagers during presentations.
- Visit the Exhibit Hall, where more than 200 exhibitors will share the latest educational products.
- The more you participate in the presentations, the more you will get out of the conference.
- Help us continually improve the Annual Meeting and Exposition by filling out the post-conference survey, sent via email in late April.
- Be safe! Remove your name badge when you leave the conference facilities at the end of the day.


## Everyone's favorite puzzle is now

 youl students' favorite MATH LESSO ends June 1, 2010.Enhance learning in grades 3-12 with the Rubik's Cube Math Education Kit. Makes learning Math more fun!

Each kit only $\$ 33,33 *$ a $\$ 150$ value! *when purchasing 3 kits

Math Education Kit contains everything educators need to use the Rubik's
Cube as a Math Manipulative
12 Rubik's Cubes
1 Instructional DVD
1 CD with 12 Diverse Math Lessons and Activities
1 Teaching Tips
12 Solution Guides
2 Sign Out Sheets
2 Posters
2 Certificates
4 Stickers

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## www.YouCanDoTheCube.com

- Promotes 21 st Century Skills including problem solving, critical thinking, perseverance and encourages logical thinking
- Online community - Teacher experiences with program • Free downloads - List of schools currently using the Math Education Kit

Helps to visualize Math concepts

When ordering online use code NCTMSD4

## NCTM Members Have Access to All These Great Resources!

Looking for lessons, activities, resources, and teaching tips? NCTM has you covered. We've got all of this and more in one location and set up by grade band to help make it easier. Check us out today!
www.nctm.org/resources

Access your NCTM journal online (including searchable archives of 1,000 articles). View ON-Math, our interactive online journal; new publications; and more.

## www.nctm.org/publications

Full Member-only online access to the NCTM Principles \& Standards for School Mathematics. Www.nctm.org/standards

Invest in You! NCTM's professional development resources provide you with the opportunity to focus on improving your skills. Let us help you expand your knowledge base with e-Workshops, conferences, meetings, and more.

## www.nctm.org/profdev



These are just a few of the many resources available to you that are included with your membership.
Check us out to see how we can help you; visit www.nctm.org/membership.
Need help with your membership or have questions? Contact us by phone (800) 235-7566 or by e-mail nctm@nctm.org.

www.keypress.com • Visit us at booth \#1041


WARNING: YOUR STUDENTS MAY DEVELOP A SUDDEN, INCURABLE INTEREST IN MATHEMATICS.

## WEDNESDAY PLANNER

Plan your conference activities here.


## HIGHLIGHTS

- Opening Session (Presentation 2): Change Is Good When Your Attitude Is Great!


## Registration Hours

8:00 a.m.-7:00 p.m.

Bookstore and
Member Showcase Hours
10:00 a.m.-7:00 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 conform to fire codes, it will be necessary to ask persons sitting on the floor or standing to leave the room.
 Regional Caucuses for Delegates and Alternates

| Caucus | Location | Presiders |
| :--- | :--- | :--- |
| Canadian Caucus <br> 2:00 p.m.-4:00 p.m. | 17 B <br> (Convention Center) | Rita Janes, Educational Solutions, St. John's, Newfoundland |
| Central Caucus <br> 2:00 p.m.-4:00 p.m. | 16 B <br> (Convention Center) | Bethany Noblitt, Northern Kentucky University, <br> Highland Heights, Kentucky <br> Tom Muchlinski, Retired, Plymouth, Minnesota |
| Eastern Caucus <br> 2:00 p.m.-4:00 p.m. | 16 A <br> (Convention Center) | Maria Diamantis, Southern Connecticut State University, <br> New Haven, Connecticut <br> Neil Cooperman, Millburn High School, Millburn, New Jersey |
| Southern Caucus <br> 2:00 p.m.-4:00 p.m. | 14 A/B <br> (Convention Center) | Desha L. Williams, Kennesaw State University, Kennesaw, Georgia <br> Vanessa Cleaver, Little Rock School District, Little Rock, Arkansas |
| Western Caucus <br> 2:00 p.m.-4:00 p.m. | (Convention Center) | David Brancamp, Nevada Department of Education, <br> Carson City, Nevada <br> Sandy Christie, Puget Sound Educational Service District, <br> Renton, Washington |
| Affiliates-at-Large <br> Caucus <br> 2:00 p.m.-4:00 p.m. | 17 A <br> (Convention Center) | Vena Long, University of Tennessee, Knoxville, Tennessee |



## 1

## New Member and First Timers' Orientation

(General Interest) Session
New to NCTM? Join members of the NCTM Board to learn how to maximize your membership experience! From journals and online lessons, tools, and activities to networking and career-advancement opportunities, you'll discover all that NCTM has to offer you. Firsttime attendees, learn how to make the most of your time at the conference.

National Council of Teachers of Mathematics Board of Directors
National Council of Teachers of Mathematics, Reston, Virginia
6 A (Convention Center)

## 5:30 p.m.-7:00 p.m.

2


## Change Is Good When Your Attitude Is Great!

 Opening SessionRemarks by NCTM President Henry S. Kepner, Jr.
Change happens! Life happens! Change is essential to any growth process, yet nobody wants to change. Progress necessitates change, and change is the key to progress.
Jolley will share his "VDAD" (Vision, Decision, Action, Desire) formula for embracing change. You will view change as an ally, believing that change is good!
Willie Jolley is truly a renaissance man - an award winning speaker, singer, author, and national columnist, all in one. In 1999 he was named "One of the Outstanding Five Speakers in the World" by Toastmasters International. He is the author of two international best selling books, It Only Takes a Minute to Change Your Life! and A Setback Is a Setup for a Comeback, and coauthor of several more. He is host of the radio show, The Willie Jolley Weekend Show on XM Radio.
Willie Jolley
Willie Jolley Productions, Inc., Washington, D.C.
Ballroom 20 (Convention Center)


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A Mathematics Leader's Guide to Lesson Study in Practice, Gr 6-12 978-0-325-02799-9 / 2010 / $248 \mathrm{pp} / \$ 25.00$

Across the world lesson study gives teachers immediate classroom-based feedback that helps them evaluate and improve their instructional effectiveness. They develop a method for ongoing learning about mathematics and the craft of teaching.

In A Mathematics Leader's Guide to Lesson Study in Practice, Jane Gorman, June Mark, and Johannah Nikula share the best practices they've learned in leading lesson study teams, training lesson study coaches, and launching lesson study programs in schools. Taking teams beyond understanding how to get started, the guide provides a resource for leaders and teams to use across many lesson study cycles to continually deepen lesson study practices.

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for samples of video and sessions.


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Lesson Study in Practice: A Mathematics Staff Development Course offers a structured introduction to lesson study in a learn-by-doing format. Includes 10 ready-to-go PD sessions and a DVD-ROM with classroom case-study videos and more.
Gr 6-12 / 978-0-325-02800-2 / 2010 / Binder + DVD-ROM + book / \$195.00

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## Newbooks <br> 

Shop online where you can view tables of contents and sample pages! For more information or to place an order,


All conference attendees will receive a special conference discount of $25 \%$ off the NCTM list price on all purchases made in the Bookstore.* Visit the NCTM Bookstore in the Exhibit Hall!

> Store hours: Wednesday 10 a.m. -7 p.m. - Thursday 7 a.m.-5:30 p.m.
> Friday 7:30 a.m.-5:30 p.m. - Saturday 8:30 a.m.-12 p.m.

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LOR Learn $\leftrightarrow$ Reflect Strand

CW Exhibitor Workshop
*NBR New Teacher Strand
NCTM Committee Presentation

## HIGHLIGHTS

- 61st Annual Delegate Assembly (Presentation 4)
- Learn $\leftrightarrow$ Reflect Kickoff (Presentation 69)
- New Teacher Workshop and Kickoff (Presentation 302.1)
- Learn $\leftrightarrow$ Reflect Reflection Session (Presentation 307)
- NCTM President's Address (Presentation 340)


## Registration Hours <br> 7:00 a.m.-4:00 p.m. <br> Exhibits and <br> Cyber Café Hours <br> 8:30 a.m.-5:00 p.m. <br> Bookstore and Member Showcase Hours 7:00 a.m.-5:30 p.m.

## Fire Codes

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## 3

## New Member and First Timers' Orientation (General Interest) Session

New to NCTM? Join members of the NCTM Board to learn how to maximize your membership experience! From journals and online lessons, tools, and activities to networking and career-advancement opportunities, you'll discover all that NCTM has to offer you. First-time attendees, learn how to make the most of your time at the conference.

## National Council of Teachers of Mathematics Board of Directors

National Council of Teachers of Mathematics, Reston, Virginia

6 A (Convention Center)

## 6

## Connecting Algebra from Grade to Grade! (General Interest) Session

Explore classic problems as algebra develops, grades $\mathrm{K}-12$, in topics such as patterns, functions, and rate of change.
Solve problems, view students' work demonstrating connections for concept development. Gain the insight that the structure of problems formed in early grades is the foundation for creating a connected vision of math.
Nell W. McAnelly
Louisiana State University, Baton Rouge
Elizabeth Ballroom D/E (Hyatt)

## 7 <br> Promote Number Sense with Effective Games and Practices

(Pre-K-2) Session
Experience highly engaging activities and instructional strategies that promote students' greater participation and sense making. A ready-to-use handout will help you enhance mathematical reasoning and build your students' confidence. Discover repeatable, adaptable activities that work well at school and home.

Laura Lee Choate
Fallbrook Union Elementary School District, California
16 B (Convention Center)

## 8

## Differentiation: Supporting and Challenging All Students

(Pre-K-2) Session
The diversity of learning needs in classrooms is growing. By adapting classroom practices that address this growing diversity, teachers can increase the likelihood that curricular outcomes will be met. Come explore how to transform tasks to allow access and success for all students.

## Amy Cliffe Mayfield

Math Solutions, Sausalito, California
5 B (Convention Center)

## 9

## Supporting Teachers at Crucial Junctures

(Pre-K-2, 9-12, Higher Education, Preservice and In-Service) Session
This session will discuss the nature of three graduate-level mathematics education programs that are designed to support teachers at crucial junctures in the mathematics education continuum. Our focuses will be on programs for grades K-3 mathematics specialists, Algebra 1 teachers, and newly certified secondary school mathematics teachers.

## Ira Papick

University of Nebraska—Lincoln

## Jim Lewis

University of Nebraska-Lincoln
Molly A/B (Hyatt)

## 10

## Grades Pre-K-2 Math: It's Mostly about the Numbers

(Pre-K-2, Preservice and In-Service) Session
Current recommendations focus on helping students build an understanding of number and number relationships. This begins with helping students build an intuitive feel for number meaning through explorations and experiences. This session will provide teachers with concrete ideas to take back to their own classrooms.

## Carol Inzerillo

Kendall Hunt Publishing Company, Dubuque, Iowa
2 (Convention Center)

## 11

Flips, Turns, and Slides: Sorry, This Is Not Dance Class
(Pre-K-5) Session
This presentation will give you classroom resources to help your students develop the spatial visualization skills needed to recognize and perform geometric transformation (flips, turns, and slides). Each participant will create their own "Flips, Turns, and Slides" book.

## Belinda Phillips Robertson

Arkansas Center for Mathematics and Science Education, University of Central Arkansas, Conway

10 (Convention Center)

12

## I've Assessed: Now What? New Insights into Data-Guided Instructional Planning (Pre-K-5) Session <br> IES-funded research examining three years of longitudinal assessment data reveals patterns in students' learning that apply to classroom instruction. Learn about these new patterns and their relevance to your students and instruction. Actual profiles and lesson plans will be shared, as well as guidance on effective classroom implementation. <br> Herbert P. Ginsburg <br> Teachers College, Columbia University, New York, New York <br> Doug Moore <br> Wireless Generation, Brooklyn, New York

Douglas Pavilion D (Hyatt)

## 13

Math Is a Life Skill: Presenting
Mathematical Concepts in Contexts That
Students Understand
(Pre-K-5) Session
Stories that present mathematical concepts within the context of a kid's-world setting help students to understand that math isn't just a school skill: it's a life skill. Visual models help students to understand difficult concepts, make connections to other areas of learning, and build their mathematical comprehension.
Stuart J. Murphy
MathStart Series, Boston, Massachusetts
20 D (Convention Center)

## 14

Keeping Up, Not Catching Up:
Differentiating Instruction without
Differentiating Children
(Pre-k-5) Session
(Pre-K-5) Session
For strugglers, timing matters. A little help before a lesson gives a child two chances to learn - the help session, and then the lesson for which the child is more ready. It saves time, doesn't hold the class back, and helps strugglers get the real lesson, not watered down, so they can rejoin the mainstream rather than falling further behind.
Shannon Sauder
Cunniff Elementary School, Watertown, Massachusetts
E. Paul Goldenberg

Education Development Center, Newton, Massachusetts
Elizabeth Ballroom H (Hyatt)

## 15 <br> Investigating the Steps of Statistical Problem Solving in the Elementary Grades <br> (3-5) Session <br> This session will present classroom-ready activities that involve the process of statistical problem solving. We will examine this process, which involves more than collecting data and making graphs but includes formulating good statistical questions and interpreting the results.

Patrick Hopfensperger
University of Wisconsin-Milwaukee
4 (Convention Center)

## 16

Making Sense of Multiplication and Division: Activities, Games, and More! (3-5) Session
Avoid multiplication mayhem and division disaster! From meanings to basic facts to computational procedures, the speakers will use hands-on concrete, pictorial, and symbolic activities. Games and writing activities will show how to develop skills meaningfully. Have marvelous multiplication and dazzling division!

Janet H. Caldwell
Rowan University, Glassboro, New Jersey
Manchester Ballroom D (Hyatt)

## 17

Hop into Mathematics and Science Connections
(3-5) Session
Experience inquiry-based projects exploring mathematics content (data collection, geometry concepts, measurement, and graphing) and science content (ecosystems, habitats, adaptations, food chains, and structure and function).

## Betty Stephens

Northern Kentucky University Center for Integrative Natural Science and Mathematics, Highland Heights

Salon 4 (Marriott)
18
Teachers' Stories in Action: Ways to Improve Teachers' Geometry Knowledge

## (3-5, Preservice and In-Service) Research Session

This presentation will demonstrate how to conduct narrative analysis, a qualitative method. Teachers will investigate their knowledge and how to design activities for teachers by using results. This study incorporated the research results with an analysis that used students' work in a set of geometry activities to improve teachers' knowledge.

## Fatma Aslan Tutak

Bogazici University, Istanbul, Turkey
Gregory A/B (Hyatt)

## It Starts with a Cube

## (3-8) Session

A cube is the starting point for many rich problems involving even more math concepts. Work your way through factors, combinatorics, volume, surface area, networks, and more by solving Math Olympiad problems. A dozen of these cube problems provide a fresh approach to these topics. More than 50 additional Math Olympiad problems will be distributed.

Dennis Mulhearn
Math Olympiads, Bellmore, New York
Manchester 1/2 (Marriott)

## 20

## Linking Concepts, Context, and Problem Solving through Singapore Math Model Drawing

## (3-8) Session

Learn how special education students improved their ability to understand and visualize word problems, resulting in improved test performance and more confident students. The presenter will share the model-drawing steps and problems that connect to the real world and reinforce skills and concepts, as well as examples of students' work.

## Patty E. Smith

Educational Resources Group, Inc., Charleston, South Carolina

15 B (Convention Center)

## 21

## Teaching through Problem Solving to Develop Concepts in the Context

## (3-8, Preservice and In-Service) Session

Teaching though problem solving has been a major focus in mathematics education because it helps students develop concepts in context so that they can see connections. Japanese textbooks use contextualized problems to introduce new concepts to students. This session will discuss how you can use problem solving in everyday teaching.

## Akihiko Takahashi

DePaul University, Chicago, Illinois
6 F (Convention Center)

## 22

## Using Misconceptions and Students' Thinking to Deepen Teachers' Mathematics Knowledge

## (3-8, Preservice and In-Service) Session

Explore activities intended to develop teachers' knowledge of content and students. Grades 3-8 topics from fractions, algebra, and geometry will situate three types of activitiesanalyzing students' work, discussing one's own misconceptions, and engaging with research on students' thinking.

## Mary Lou Metz

Indiana University of Pennsylvania
Amy F. Hillen
Kennesaw State University, Georgia
Elizabeth Hughes
University of Northern Iowa, Cedar Falls
Manchester Ballroom B (Hyatt)

## 23

## Journey through the Core (3-12) Session

One of the goals of the team writing the common core standards was to capture the coherence of mathematics. The team identified unifying principles that tie together the disparate topics in school mathematics. The speaker will describe these principles and illustrate with examples how they can provide coherence to the curriculum.

William McCallum
University of Arizona, Tucson
6 E (Convention Center)

## 24

## Making Sense of Multiplication with Fractions: The Role of Context <br> (6-8) Session

Field-tested, carefully crafted problems that use the context of designing urban playgrounds will be examined, in order to support students' development of big ideas and strategies related to multiplication with fractions and equivalent forms of fractions-decimals and percents. Helpful suggestions for classroom use and materials will be provided.

## 25

## Wikis in the Math Classroom <br> (6-12) Session

Increase classroom communication and collaboration. Create a classroom resource. Discover how wikis can be used in the math classroom. Receive how-to information including lesson ideas, lesson plans, technology tips, and related Web site information.
Jennie L. Gibson
Idaho Virtual Academy, Jerome
Edward A/B/C/D (Hyatt)

## 26

SMART ${ }^{\text {тм }}$ Games That Engage

## (6-12) Session

Experience exciting, new interactive algebra games using SMART technology that will reinforce your lessons in a fun way. These engaging games can be customized to any grade level. CDs will be given out with the templates already created, waiting for your personal editing. Be prepared to interact, learn, and have fun, just like your students.
Karen Lee Compere
Trinity Christian Academy, Addison, Texas
Judy Lins
Trinity Christian Academy, Addison, Texas
Elizabeth Ballroom A (Hyatt)

## 27

## Myth Busters: Engaging Students in Data Representation

## (6-12) Session

Imagine your students creating their own Myth Busters episodes! In this session you will experience the power of giving students choices, integrating technology, and applying data analyisis to bring math and science full circle. See several student-made projects and recieve lesson plans and rubrics.

## Amber Muscarello

Sartartia Middle School, Sugar Land, Texas
Anna Lauryn Davila
Sartartia Middle School, Sugar Land, Texas
Salon 1/2 (Marriott)

## Lynn D. Tarlow

City University of New York-City College

# Build Mathematics Instructional Capacity with Help from Pearson 

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When your district is ready to take the next step to improve math instruction, advance student achievement, and build capacity, Pearson's on-site math training programs are the solution. Our training supports any curriculum currently in use, including Pearson's research-based programs, and is tailored to your district's specific needs to help you get results that matter.


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 check out our newest offerings!
## 28

## Lines of Best Fit: Fact and Fiction?

(6-12) Session
It's easy to push the LinReg button, but how and why does a line of best fit really work? What does "regression" mean? How is that related to correlation? And what common misunderstanding appears frequently in textbooks and on tests?

## David Bock

Ithaca High School, New York
11 B (Convention Center)

## 29

## Patty Paper Geometry on the Go!

 (6-12) SessionStart easy and go far folding your way to sophisticated geometric reasoning you and your students will find irresistible! Explore how patty paper activities can motivate students to talk about geometry, use and increase their mathematical vocabulary, discover and retain important geometric ideas, and persist in wrestling with challenging problems.

## Jenny K. Tsankova

Roger Williams University, Bristol, Rhode Island
Polina Dina Sabinin
Boston University, Massachusetts
6 A (Convention Center)

## 30

## Strengthening Connections among Representations of Algebraic Functions

## (6-12) Session

Connecting the symbolic, verbal, tabular, and graphical representations of algebraic functions will help students improve their depth of understanding and fluency. Shared strategies will emphasize these connections and foster an environment that encourages students' conjectures when studying linear, nonlinear, and piecewise functions.

## Elizabeth Kim McClain

University of Kansas, Lawrence

## Susan Gay

University of Kansas, Lawrence
Manchester Ballroom H (Hyatt)

## 31

## Connecting Algebraic Ideas in Middle and High School Mathematics

## (6-12) Session

What does it mean for a student to have a coherent experience of algebra in middle and high school? Participants in this hands-on session will trace core algebraic ideas from middle school through high school mathematics using two NSF curricula, Connected Mathematics Project 2 and the high school CME Project, both published by Pearson.

Sarah Sword<br>Education Development Center, Inc., Newton, Massachusetts<br>Bowen Kerins<br>Education Development Center, Inc., Newton, Massachusetts

Salon 3 (Marriott)

## 32 <br> Teaching for Understanding and Its Impact on Learning in Algebra

## (6-12, Higher Education) Session

The speakers will discuss a student-friendly framework designed to develop habits of mind (predicting, applying, representing, justifying, comparing) that help students learn algebra with understanding. They will share data from a project that evaluates the use of this framework. Participants will leave with tasks and rubrics used.

Jon Hasenbank
University of Wisconsin-La Crosse
Jennifer Kosiak
University of Wisconsin-La Crosse
6 C (Convention Center)


Making Mathematics "Real" (6-12, Higher Education) Session
A critical-thinking approach encouraging the development of mathematical intuition and student interaction (while discouraging blind reliance on algorithms) is described. Concrete examples come from experiences in the ultimate test-bed of linking mathematical concepts and context: beginning calculus classes with 200-plus students.
Donald Saari is a mathematician interested in dynamic systems with emphases ranging from the evolution of the universe and chaotic price dynamics to voting theory and the evolution of social norms. He directs a research institute in California that emphasizes the math of the social and behavioral sciences. His interest in teaching challenged him to find a way to teach math so that students in a class of more than 200 could outperform those in smaller classes.

## Donald Saari

Institute for Math Behavioral Sciences, University of California-Irvine

20 A/B/C (Convention Center)

34

## Making Dynamic Connections between Algebra and Geometry (9-12) Session

Assist students in connecting applications, linear equations and coordinate geometry using geometry software. The presentation will make use of Geogebra, a free program. Applications of interest to high school students will be examined and lesson outlines will be provided so that you can use the materials or modify them to fit your needs.

Amy B. Bell
A. C. Flora High School, Columbia, South Carolina

17 B (Convention Center)

## 35

Why Does a Soccer Ball Have 12 Pentagons?

## (9-12) Session

We spend most of our geometry classes on 2-D figures, but we live in a 3-D world! Improve students' ability to think in 3-D by studying Eüler's formula and some extensions for regular and semiregular polyhedra using manipulatives, photos of real-life models, and software. See how a soccer ball is manufactured and why it has exactly 12 pentagons.

## Laurie Bass

Ethical Culture Fieldston School, Bronx, New York

## 36

The Equivalence of Coffee Cups and Doughnuts
(9-12) Session
This session will explore some elements of topology, mathematics often only for advanced undergraduates that is accessible to talented students before calculus. Investigate geometric properties from a first proof course such as sets, functions, or knot theory, and receive both a proof-based and a hands-on introduction to topology.

## Joshu Fisher

Douglas Pavilion B (Hyatt)

Johns Hopkins University-Center for Talented Youth, Baltimore, Maryland

## 37

## Sliding through Calculus: Using Sliders and Animations to See Patterns and Change (9-12, Higher Education) Session <br> Computer animations help students visualize concepts, patterns, and change in calculus. The speaker will compare several software programs, show examples, and discuss possibilities for using animations effectively in the classroom with students.

## Ruth Dover

Illinois Mathematics and Science Academy, Aurora
San Diego Ballroom B (Marriott)

## 38

## Connecting Simple Physical Phenomena to Fundamental Concepts of Calculus

## (9-12, Higher Education, Preservice and In-Service) Session

This session will show how familiar phenomena can be used to explore concepts in calculus. Data streaming collects and displays data at high rates in real time. The data is used to develop a mathematical model. The model leads to mathematical discourse on concepts. A computer algebra system will lift the discourse further to pure mathematics.

G. T. Springer<br>Hewlett-Packard Company, San Diego, California

Manchester Ballroom C (Hyatt)

## 39

## Math Phobic? Answers to Real Problems (Higher Education) Session

This presentation will give strategies to help identify math-phobic students and, more important, strategies that college professors can use to help reduce math anxiety. Come prepared to start reducing and eliminating math phobia!

## Amelia Ann Allen

Monmouth University, Long Branch, New Jersey
Harvey Allen
Monmouth University, Long Branch, New Jersey
Elizabeth Ballroom C (Hyatt)

## 40

## Brain-Based Strategies to Promote Learning Mathematics for All Students <br> (Preservice and In-Service) Session

How is a child's perception of a concept determined by the child's experiences? How do students "experience" concepts of number or algebra? How is learning mathematics anchored through visual and concrete manipulatives? This session will address brain-based strategies to help all students actively participate in learning mathematics.

## Candace Yamagata

EC Educational Consulting, Orem, Utah
Yvonne Randall
Touro University Nevada, Henderson
Helen McAnany
Fertitta Middle School, Las Vegas, Nevada
6 D (Convention Center)

8:30 a.m.-9:30 a.m.

## ew 41

## Math Out of the Box®—a Numbers Game! <br> (General Interest) Exhibitor Workshop

Discover patterns in the world around us through addition, subtraction, multiplication, division, fractions, decimals, and probability in Math Out of the Box, an inquiry-based curriculum developed at Clemson University.
Carolina Biological Supply Company
Carolina Biological Supply Company, Burlington, North Carolina

1 B (Convention Center)

## EW 41.1

## Aim for Algebra: Not Business As Usual (General Interest) Exhibitor Workshop

Learn about an engaging algebra intervention program that helps students overcome common barriers to success in algebra. Aim for Algebra is a conceptually-based, standardsaligned supplementary program organized in a modular format allowing for easy implementation, flexible programming, and individualized student placement.

## Mardi Gale

It's About Time, Armonk, New York
Torrey (Marriott)

## eW 42

## Response to Intervention - Mathematics (K-6) Exhibitor Workshop

From universal screening and progress monitoring to intensive intervention, learn about different solutions for providing intervention around mathematics in your classroom.

## Pearson

Pearson, Upper Saddle River, New Jersey

## 43

## Composing and Decomposing Numbers:

 An Important Prerequisite Math Skill
## (Pre-K-2) Gallery Workshop

Research suggests that between the ages of 9 and 12 , the brain matures enough to take things apart and put them together in new ways. Yet many states expect second graders to add and subtract "whether or not regrouping is necessary." How can we provide early mathematical experiences to help support this expectation?

Dinah Lee Chancellor
D. R. Chancellor, Inc., Southlake, Texas

5 A (Convention Center)

## 44

## Big Ideas for Little People: Important Things after Counting <br> (Pre-K-2) Gallery Workshop

This presentation will address four foundational big ideas about numbers that will help children be successful in mathematics. The focus will be how to develop children's understanding of these number relationships in whole-class lessons and small-group activities or centers.

## Carollee Norris

Peace River North School District, Fort Saint John, British Columbia, Canada

Betsy A/B/C (Hyatt)

## 45 <br> Focal Points + Manipulatives + Theme = Learning for Understanding!

## (Pre-K-2) Gallery Workshop

Using ideas from NCTM's Focal Points, we will share grades pre-K-2 activities using games and manipulatives. Ideas will focus on the number and operation strand using common themes-farm, rain forest, ocean, and carnival.

## Jeannie Gee

Des Moines Public Schools, Iowa
Salon 6 (Marriott)

## 46

## Catch the Attribute Train!

## (Pre-K-5) Gallery Workshop

Participants will explore how the use of SMART Board technology, attribute and pattern blocks, games, and graphic organizers can enhance children's understanding of patterns, relationships, and functions. Attendees will leave with ready-to-use activities and lessons for their classrooms.

## Susan H. Davies

Fairfax County Public Schools, Springfield, Virginia
3 (Convention Center)

## 47

## Contextual Problem Solving: It's More than a Story Problem

## (Pre-K-5) Gallery Workshop

This interactive presentation will examine the differences between story problems connected to school mathematics and contextual problems based on students' experiences. Participants will view videos of students engaged in problem solving and discuss how contextual problems encourage meaningful approaches to a solution.

Laurel Marsh<br>Howard County Public Schools, Columbia, Maryland

## Kay Sammons

Howard County Public Schools, Columbia, Maryland 14 A (Convention Center)

## Rhythm and Hues: Teaching with the SMART Board ${ }^{\text {TM }}$ and TI-10

## (Pre-K-5, Preservice and In-Service) Gallery Workshop

Discover how the SMART Board, TI-10, music, literature, and manipulatives can build conceptual understanding and make learning mathematics fun! Hands-on activities will include unique features of the SMART Board and TI-10. Special needs will be addressed. Participants will leave with ready-to-use lessons.

## Christine Ruda

Teachers Teaching with Technology ( $\mathrm{T}^{3}$ ), Miami, Florida
Manchester Ballroom E/F (Hyatt)

## 49

## Leading a Schoolwide Effort to Increase

 Number Sense for All!(Pre-K-8) Gallery Workshop
"I could teach $\qquad$ , if only they had $\qquad$ ," or "They don't know their math facts." Math Leaders hear these comments all the time. This presentation will examine your own beliefs about number sense and how to help teachers help students become flexible with numbers. Leave with brain-compatible strategies to implement in your own schools.

## Debbie Scruggs

Kokopelli Educational Consulting, Albuquerque, New Mexico

50
Children's Literature and Mathematics: Connecting and Extending

## (3-5) Gallery Workshop

Many current children's literature books provide opportunities for teachers to connect the mathematics with other areas. How do the activities fit with your lessons? How can NCTM's Curriculum Focal Points and connections be implemented using children's literature? A variety of materials will be provided.

Richard Callan
Bunker Hill Elementary School, Indianapolis, Indiana
Don S. Balka
Saint Mary's College, Notre Dame, Indiana
Elizabeth Ballroom G (Hyatt)

## 51

## Connecting the Student's Toybox with the Teacher's Mathematical Toolbox

## (3-5) Gallery Workshop

Can playing with bubbles or balloons help my high-stakes assessment results? Experience ways to enrich mathematical knowledge and deepen understanding using everyday toys in order to address content standards. Simple items will be used to demonstrate fun, easy-to-implement tasks that reinforce the skills necessary for students' achievement.

## Jeremy J. Winters

Middle Tennessee State University, Murfreesboro
Leslie Marrie Lasater
Campus School, Middle Tennessee State University, Murfreesboro
Cindy Cliche
Campus School, Middle Tennessee State University, Murfreesboro

Manchester Ballroom I (Hyatt)

## 52

## Measurement Mania

## (3-5) Gallery Workshop

Are you looking for creative ways to help students master concepts in measurement? Try out these classroom ready, hands-on activities that engage and motivate students. Have you ever been in a metric lineup? Created your measurement mug? Built a weight wall? Find out how! Be part of the measurement mania!

## Connie Horgan

Jerome School District, Idaho

## 53

## How to Love 3-D Geometry (3-8) Gallery Workshop

Come to enrich your teaching of spatial geometry through play and games. You will build the most symmetrical solids and play with decomposition to nets to discover what solids can be build with given nets. You will find out how to represent and show with simple materials the abstract 3-D constructs such as height and diagonal.

## Aniceta Skowron

Geometro, Ancaster, Ontario, Canada
11 A (Convention Center)

## 54 <br> Using Origami in an Algebra Class, Meaningfully <br> (6-8) Gallery Workshop

Change is an essential concept in algebra. Using origami we will explore how length, area, and volume change as a function of the size of the paper that is folded. Models will be built and used with extensions beyond what we will do in this gallery workshop. Teaching algebra is not a prerequisite to benefit from this presentation.

## Joseph R. Georgeson

University School of Milwaukee, Wisconsin
16 A (Convention Center)

## 55

Beyond M\&M's and Cheerios: Making Data Collection and Analysis Fun!
(6-8) Gallery Workshop
Let's make statistics fun! Participants will actively collect and engage in a variety of hands-on data-collection activities to generate data suitable for scatterplots, trend, box-and-whiskers plots, bar graphs, histograms, and other descriptive statistics. Handouts with many other activities will be included.

## Colleen Watson

James Madison University, Harrisonburg, Virginia
Douglas Pavilion C (Hyatt)

A Leading Distributor of Calculators to the Education Market, Offers You The Lowest Price Guarantee!


## 56

## Body Parts, Livestock, and Bacteria: Algebra Contexts for Middle Grades (6-8, Preservice and In-Service) Gallery Workshop

This gallery workshop will focus on explorations designed to help students develop their algebraic thinking with a variety of concepts and relationships. These explorations help students connect algebra to a variety of contexts and are useful in fostering rich discussions in the mathematics classroom.

## Terry Goodman

University of Central Missouri, Warrensburg
Ann McCoy
University of Central Missouri, Warrensburg
8 (Convention Center)

## 57

## Making Math Come Alive by Working on Problems of Living Mathematicians

(6-12) Gallery Workshop
Can your students name three professional living musicians and athletes? Of course. Can they name three living professional mathematicians or any of their problems? Can you? In this gallery workshop we will explore some rich, contemporary problems that are accessible to middle school students and learn about some of the mathematicians connected to these problems.

James R. Matthews
Siena College, Loudonville, New York
Manchester Ballroom G (Hyatt)

## 58

Math on the Move: Making Connections!
(6-12) Gallery Workshop
Come prepared to move! Using lessons that helped the speaker's students make connections and be successful, participants will kinesthetically and visually explore the connections in the order of operations, integer operations, greatest common factor and lowest common multiple using prime factorization, properties of polygons, and other topics.
Julie Nurnberger-Haag
Michigan State University, East Lansing
San Diego Ballroom A (Marriott)

## 59

## Creating an "Algebra for All" Toolkit (6-12) Gallery Workshop

Do you teach algebra to English language learners, students with disabilities, or unmotivated students? If so, come "fill your toolkit" with hands-on activities, games, graphic organizers, puzzles, discovery lessons. and journaling ideas to make algebra truly accessible for all.
Sharon Bryant Hoffert
Chesterfield County Public Schools, Midlothian, Virginia
15 A (Convention Center)

## 60

Pyramids, Cubes, and Stellated Octahedrons: Hands-On, Geometric Origami

## (6-12) Gallery Workshop

Learn to build various 3-D geometric figures, including the beautiful stellated octahedron, from colorful origami paper! While folding the basic building units and constructing the final "spiky-ball" structure, the speaker will address geometric concepts that arise during the process, including quadrilaterals, triangles, angles, and surface area.

## Mansoor Kapasi

Los Angeles Unified School District, California
9 (Convention Center)

## 61

Geometry Investigations for 2010
(6-12) Gallery Workshop
Does every Pentomino tile the plane? What are all the Archimedean tilings? What is Pick's formula? What is origamics? Can you solve the challenging geometry constructions needed to design the stained-glass windows and tracery of gothic cathedrals? If these are new to you, come explore some unusual and very cool geometry investigations.
Michael Serra
Key Curriculum Press, Emeryville, California
Douglas Pavilion A (Hyatt)

## 62

## Connecting the Concrete to the Abstract through 3-D Puzzles <br> (6-12) Gallery Workshop

Three-dimensional puzzles are a powerful, engaging tool to help students conceptualize important geometric concepts. Through the use of analysis, paper folding, compasses, and computer drawing tools, participants will create nets and construct puzzles while reflecting on the powerful underlying geometric concepts.

## Joyce Evelyn Frost

Finn Hill Junior High School, Kirkland, Washington
Manchester Ballroom A (Hyatt)

## 63

## Increasing Accessibility to Algebra and Geometry for All Students

## (6-12) Gallery Workshop

Make math accessible to all students by using graphic organizers (rule-of-four links sheets, webs, splashes, sorts, matches). The presenter will model helping students build on prior knowledge and communicate what they can do using multiple representations. Participants will have access to our Web site with more than 200 organizers for grades 6-12.

## Carol Hynes

Retired, Leominster Public Schools, Massachusetts
Marina E (Marriott)

## 64

## Making Secondary School Mathematics More Visual: Using Algebra Tiles from Integers to Factoring <br> (6-12) Gallery Workshop

Manipulatives in a secondary school math classroom? See how it works. Participants will use algebra tiles in a variety of situations. Operations on polynomials will be explored from factoring through completing the square. The important part is transitioning from the concrete (manipulative) to the abstract (paper and pencil).

## Virginia Head

College Preparatory Mathematics, Grand Prairie, Texas
San Diego Ballroom C (Marriott)

## 65

## It's All about the Rectangle!

(6-12, Preservice and In-Service) Gallery Workshop
Did you know that the formulas for the areas of many plane figures are based on the rectangle? Make hands-on models of figures, such as trapezoids, circles, and regular polygons. Use models to develop formulas. Discuss how these activities can be used to differentiate instruction in diverse classrooms. Classroom-ready materials will be provided.

## Teri Willard

Central Washington University, Ellensburg
Mandy McDaniel
Boise State University, Idaho

## 66

## What's New in Visualization? I Can See the Math!

(6-12, Preservice and In-Service) Gallery Workshop Presidents' Series presentation
Using some of the latest software and technology tools available, explore ways in which students can make discoveries that can sometimes be difficult to grasp. The speaker will focus on latest developments with Sketchpad V5. Optional: Bring a fully charged laptop for a hands-on experience.

## David Kapolka

Council of Presidential Awardees in Mathematics, Alto, Michigan

Elizabeth Ballroom F (Hyatt)

## 67

## Making Connections: There Really Is a Use for Why We Do That!

## (9-12) Gallery Workshop

Square root functions, reciprocal functions, trig functions and rational functions: "Why do we need to know this?" In this gallery workshop we will explore problems that connect the mathematics that is taught to the real world. The examples will span Algebra 1 to precalculus. Be prepared to use your graphing calculator to help make the connections.
Fred Decovsky
Teachers Teaching with Technology, Millburn, New Jersey
17 A (Convention Center)

## 68

Classroom Investigations to Improve
Students' Understanding of Limits and Derivatives

## (9-12, Higher Education) Gallery Workshop

This presentation will share several investigations used in the classroom to help strengthen students' understanding of limits and derivatives. The speaker will discuss some ideas for developing these investigations and offer reproducible copies to use in your classes. All levels of teaching experience are welcome.

Ken M. Collins
Charlotte Latin School, North Carolina
Elizabeth Ballroom B (Hyatt)


## New Company. Same Mission.

We are excited to announce that Cambium Learning, Inc. and Voyager Learning Company have joined together to form the leading provider of intervention curricula, educational technologies, and services for the PreK-12th grade market in the United States.

As one company, we remain steadfast to our mission to help all students achieve their full academic potential. The three core divisions-Voyager, a comprehensive intervention business; Sopris, a supplemental solutions business; and Cambium Learning Technologies-will be primarily focused on serving the needs of the nation's most challenged learners and those realizing their full potential.

We look forward to continuing to provide our customers with our proven solutions and exceptional service.

## LSR 69

## Making Math Much More Accessible to Our Students

Learn $\leftrightarrow$ Reflect Kickoff Session

## (General Interest) Session

This fast-paced, up-beat presentation will identify and model a set of practical, easy-to-adopt instructional strategies that significantly enhance mathematical learning and retention at all grades. Look at how adopting a few daily routines and shifting a few crucial mindsets can pay rich dividends in long-term mastery and test scores.

## Steven Leinwand

American Institutes for Research, Washington, D.C. 6 A (Convention Center)

## 70

Developing Early Numeracy for Prekindergarten: The Power of Small Numbers
(Pre-K-2, Preservice and In-Service) Session
The presenter will share ideas to encourage early numeracy for young children, such as the use of multiple visual models and partner games. Participants will experience activities and literature to help young children make connections.

## Patsy Kanter

PK Consultants, New Orleans, Louisiana
14 B (Convention Center)

## 71

## String Beans and Tommy Tomatoes; Mathematics Is Growing Green

(Pre-K-2, Preservice and In-Service) Session

Mathematical proficiency grows for students, teachers, and parents when they are engaged in nurturing number sense of more, less, and same; part-part-whole; and early spatial sense. Participants will use literature-based experiences, graphic organizers, and assessment tools for linking concepts in the context of a mathematical garden.

## Lana Bray Thomas

University of Louisville, Kentucky
Elizabeth Todd Brown
University of Louisville, Kentucky
Edward A/B/C/D (Hyatt)

## 72

## How Do You Know That Makes Sense?

(Pre-K-5) Session
See how children use a measurement context to explore the concepts of equality and inequality. This session will share questioning and other strategies a teacher can use to facilitate the development of students' reasoning abilities.

## Linda Venenciano

University of Hawaii, Honolulu
Hannah Slovin
University of Hawaii, Honolulu
Maria DaSilva
University of Hawaii, Honolulu
10 (Convention Center)

## 73

Algebraic Strategies for Enhancing Visual Discrimination and Numeracy in Children

## (Pre-K-5) Session

Explore a variety of easy-to-learn strategies for introducing algebraic symbols as a learning tool for children in the early grades. The presentation will focus specifically on how algebraic symbol manipulation will enhance visual discrimination and numeracy skills. Participants will also learn ways to document the effects of these strategies.
Suzy Koontz
Math Made Fun, Ithaca, New York
6 F (Convention Center)

## 74

Response to Intervention (RTI) and Math: Completing Your Assessment Plan!
(Pre-K-5) Session
Please join us to learn how a regional educational service agency in Ottawa developed and implemented a large scale RTI model for math. This model includes screening for number sense, data analysis, targeted interventions, and progress-monitoring tools for grades $1-6$. Sample screeners and intervention tools will be shared.

## Michael Klavon

Ottawa Area Independent School District, Holland, Michigan

## Robyn Lucas

Ottawa Area Independent School District, Holland, Michigan

## 75

## Making Equity Real in a Multicultural District through Professional Development (Pre-K-8) Session

Meeting the needs of all in a large, multicultural school district can be a challenging process, but well worth it when students' achievement scores continue to improve year after year. Learn how our all-inclusive, synchronized effort between an outside mathematics consultant and a district coordinator has resulted in data we are proud to share.

## Claran Einfeldt

C Math 2, Inc., Bradley, Illinois
Janice Taylor
Joliet Public Schools, District 86, Illinois
Salon 3 (Marriott)

## 76

## The Art of Smart

(Pre-K-8, Preservice and In-Service) Session
What's the goal, to make kids great in computations or great in problem solving? Neither: the goal is to make them smart! Join us as we explore a new teaching paradigm that develops algebraic thinking in even the youngest students. See how a few crucial changes to your teaching practice can produce better math students and smarter kids.

Greg Tang
Houghton Mifflin Harcourt, Cambridge, Massachusetts
20 A/B/C (Convention Center)

## 77

Spatial Relations: Building Problem-Solving Skills through a "Stacking" Approach

## (3-5) Session

Children view the world more through perceptions than knowledge. Appropriate hands-on math and science activities will be demonstrated with videos from lessons taught by student teachers. From shadows to cross sections, models to mirrors, see children develop mathematical and scientific concepts using topology, perspectives, and projections.

## Jean Morrow

Emporia State University, Kansas
Nancy Tanner Edwards
Missouri Western State University, Saint Joseph
11 B (Convention Center)

## 78

## Fractions without Distraction

## (3-5) Session

Learn to eliminate "fraction phobia" using mnemonic devices, number lines, tortillas, and more. See fun, effective, research-based activities and unique teaching tools for differentiated instruction. Learn to "smart teach" fractions. There will be door prizes and handouts!

## Sandra White

Lone Star Learning, Lubbock, Texas
17 B (Convention Center)

## 79

## Wrapping Around: Understanding

 Fractions and "Super" Units
## (3-5) Session

The speakers' team of teachers and researchers developed a lesson to help students build knowledge of units and quarter units of length as they measure. They will describe the transition from tutoring students to a whole-class lesson involving wrapping that was developed to address the struggles relating quarter units and units along a ruler.

## Chepina Witkowski

Illinois State University, Normal

## Ronda Wilder

Thomas Metcalf Elementary School, Normal, Illinois

## Roberta Maubach

Thomas Metcalf Elementary School, Normal, Illinois

## Karen Irvin

Thomas Metcalf Elementary School, Normal, Illinois
Michelle Mueller
Thomas Metcalf Elementary School, Normal, Illinois

## Craig Cullen

Illinois State University, Normal
5 B (Convention Center)

## 80

## Who Has Time for Development over Time? Helping Students Acquire Both Conceptual and Procedural Knowledge (3-5) Session

If you think you don't have enough time to develop your students' conceptual and procedural knowledge thoroughly, then this session is for you. Through a series of tasks, participants will explore how students' learning progresses from conceptual to procedural knowledge. Emphasis will be given to what "development over time" looks like.

## Shannon E. Harmon

Mississippi Council of Teacher of Mathematics, University

## 81

## Teaching Investigations Math with SMART ${ }^{\text {TM }}$ Board Technologies <br> (3-5) Session

The presenters will demonstrate how to incorporate SMART Board technologies into teaching the Investigations math program. Participants will be shown dozens of Investigations activities and games (made in notebook 10) on the SMART Board, as well as how to use the SMART document camera as part of an effective math lesson.

## Kelle Singleton

Oakridge Elementary School, Arlington, Virginia
Greg Chapuis
Oakridge Elementary School, Arlington, Virginia
Karen Heathcock
Oakridge Elementary School, Arlington, Virginia
Elizabeth Ballroom A (Hyatt)

## 82

## Creating Comics: Connecting Mathematics,

 Art, and Writing to Explain Concepts
## (3-8) Session

Writing graphic stories (i.e., comics) are a fun, efficient way for students to make connections among concepts, represent and communicate their understandings to others, explain their reasoning, and develop their problem-solving skills. Come learn how to use math comic writing with students, see sample comics, and build a demonstration comic.

Leslee Francis-Pelton<br>University of Victoria, British Columbia, Canada<br>Tim Pelton<br>University of Victoria, British Columbia, Canada<br>\section*{Karen Moore}<br>Eastern School District, St. John's, Newfoundland and Labrador, Canada

7 B (Convention Center)

## 83

## Making Connections among Concepts, Procedures, Representations, and Contexts

## (3-8) Session

Mathematics teaching in Japan centers on problem solving, and textbooks include carefully selected and coherently sequenced problems. This session will examine how a Japanese elementary school math textbook series uses problems to help students develop a web of connections among concepts, procedures, and representations using problem contexts.

## Tad Watanabe

Kennesaw State University, Georgia
San Diego Ballroom B (Marriott)

84
Adapting Instruction to Promote Equity for Special-Needs Students, Grades 3-8

## (3-8, Preservice and In-Service) Session

This session will discuss research-based strategies that adapt mathematics instruction to make it equitable for specialneeds students. The speakers will demonstrate how to adapt a problem that integrates several areas of geometry (surface area, volume, and measurement), using these strategies for grades 3-8 and a variety of special needs.

## Julie Sliva Spitzer

San Jose State University, California
Cheryl D. Roddick
San Jose State University, California
Elizabeth Ballroom C (Hyatt)

## 85

Preservice Teachers Learn to Use
Literature to Connect Children's World to
Mathematical Ideas

## (3-8, Preservice and In-Service) Session

This session describes how the book Spaghetti and Meatballs for All was used as a catalyst to help prospective elementary school teachers develop skills in connecting students' world to area, perimeter, and algebraic thinking.

Blidi S. Stemn
Hofstra University, Hempstead, New York
6 E (Convention Center)

## 86

You're Not in Math Class Any More! Integrating Math across the Curriculum (6-8) Session

It is the responsibility of every mathematics teacher to help students recognize and apply mathematics outside the contexts of mathematics. Connecting mathematics to other subject areas is an exciting way to capture students' interests. This presentation will look at examples of how mathematics can be connected to other subject areas.

Mark Evans
Saint Callistus School, Garden Grove, California
Manchester 1/2 (Marriott)

87

## The MATHCOUNTS Club Program: Free, Easy, Fun, and Effective!

(6-8) Session
The MATHCOUNTS Club Program is a free program every middle school math teacher can use in and out of the classroom. We provide all the standards-based activities and students' incentives you need! Join us as we go through the Club-in-a-Box, the online resources, and the prizes that make this club a must-have in every middle school.

## Kristen Chandler

MATHCOUNTS, Alexandria, Virginia
Manchester Ballroom B (Hyatt)

88

## Interactive Classroom Activities That Enhance Mathematical Reasoning and Problem Solving

## (6-8) Session

This session will showcase a collection of hands-on, action-oriented classroom activities, designed to develop and enhance numerical, geometric, and algebraic reasoning and skills when presented interactively. These dynamic activities support the belief that mathematics must tickle the senses as well as stretch the mind.

Evan M. Maletsky
Montclair State University, New Jersey
Manchester Ballroom D (Hyatt)

## 89

## Linking Arithmetic and Algebraic Thinking

 (6-8) SessionThis session will engage participants in activities and discussions that link algebraic thinking instruction to arithmetic instruction. Specific content focuses will be on equivalence and properties.

## Genni Steele

Math Solutions, Saint Paul, Minnesota
Manchester Ballroom H (Hyatt)

## 90 <br> Addressing Misconceptions Using OpenSource, Interactive Technologies <br> (6-8) Session <br> This interactive session will introduce the combined use of formative assessment prompts and interactive technologies to elicit and address students' known misconceptions as revealed by research. Focus topics will include identifying, locating, comparing, and operating with rationale numbers. Additional content areas will be discussed. <br> Cheryl Rose Tobey <br> Educational Development Center, Gardiner, Maine

Salon 4 (Marriott)

## 91 <br> Teaching Fractions: Is It Poetry or Mathematics?

## (6-8, Higher Education) Session

Why are students not learning fractions? The speaker will describe a likely general reason: if we continue to teach fractions-or, in fact all school mathematics-solely by the use of analogies, metaphors, and allusions rather than precise mathematical language, students will continue not to learn.

Hung-Hsi Wu
University of California Berkeley
16 B (Convention Center)

## 92

## Reading and Rhyming in the 'Rithmetic Classroom (6-12) Session

Explore the mathematical structure of poetry as we examine a variety of styles in this genre. Learn techniques designed to enable you to spark your students' creativity as they discover ways to express mathematical concepts in verse. You may encounter your own "inner poet!"
Martha Hildebrandt
Chatham University, Pittsburgh, Pennsylvania

## Barbara Biglan

Chatham University, Pittsburgh, Pennsylvania
Elizabeth Ballroom H (Hyatt)

## 93

## A SMARTer Way to Teach Math: Use SMART Notebook ${ }^{\text {TM }}$ Math

## (6-12) Session

Get an interactive look at the new SMART Notebook mathematics software. Participants will have the opportunity not only to observe, but also to take part in using the many new features relating to algebra, geometry, and other concepts. Get ideas about lesson creation, classroom instruction, and students' engagement from middle school classroom teachers.

## Jill Lyttle

Kenmore Middle School, Arlington, Virginia
Michelle Meehan
Kenmore Middle School, Arlington, Virginia
Manchester Ballroom C (Hyatt)

## 94

## Can Three Wrongs Make a Right? Drive Students' Thinking with Test Items (6-12) Session

We use items from large-scale math tests with our students, but can we use them for more than drill, to help drive their thinking to higher levels? Absolutely! Using case studies, the speaker will build insights into item and test construction and explore methods and strategies to make test items into tools that really get students thinking.

## Sendhil Revuluri

Chicago Public Schools, Illinois

## 95 <br> Fractions from the Ground Up <br> (6-12, Higher Education) Session

Many students begin eighth-grade algebra with a very rudimentary understanding of algorithms for fraction operations, which increases the likelihood that they will need to take algebra a second time. Explore some language issues and visual models that better connect fraction and operation concepts to students' experience.
Lewis Philip Douglas
Lawrence Hall of Science, Berkeley, California
Elizabeth Ballroom D/E (Hyatt)

## 96

We Are Leaving Our English Language
Learners (ELLs) Behind: How Teachers Can
Help Prevent It
(6-12, Higher Education, Preservice and In-Service) Session
ELLs typically score low on state assessment tests. They need to learn mathematics language in the context of mathematics lessons. This session will offer tested classroom activities that help students practice geometric vocabulary, with an emphasis on implementing the Texas English Language Proficiency Standards.

Bill Jasper
Sam Houston State University, Huntsville, Texas
2 (Convention Center)

## 97

Searching for Solutions to Solution Sets (9-12) Session
What does it mean to solve an equation or a system of equations? Explore this question to gain insight into teaching and assessing these important concepts. Experiences and discussions with NSF Mathematics Leadership Institute lead teachers will be shared focusing on the common misconceptions about the nature of solution sets.

Richard Parr
Rice University School Mathematics Project, Houston, Texas
Anne Papakonstantinou
Rice University School Mathematics Project, Houston, Texas
15 B (Convention Center)

## 98

## Algebra Explained through Magic! (9-12) Session

Magic tricks that are explained by using algebra will be presented. First the trick will be presented with cards, number cubes, calendars, or mental patterns. Then the trick will be explained showing the algebra that the teacher can share with their students.

John Gregory
University of Florida, Gainesville
20 D (Convention Center)

## 99

## Transform Geometry with Transformations

 (9-12) SessionStudents come to geometry with a basic understanding of transformations. So, why not begin with what they know? This session will provide a series of hands-on activities that develop conceptual understanding of the properties of triangles and quadrilaterals in connection to students' knowledge of transformations.
Colleen McLean Eddy
University of North Texas, Denton
Kevin Hughes
Arlington Independent School District, Texas
Vincent Kieftenbeld
University of North Texas, Denton
Carole Hayata
University of North Texas, Denton
6 B (Convention Center)

## 100

## Focus in High School Mathematics:

Reasoning and Sense Making
(9-12) Session
NCTM has recognized the need to promote new discussion around high school mathematics. This session will provide participants an opportunity to discuss NCTM's Focus in High School Mathematics: Reasoning and Sense Making. Other NCTM activities related to high school mathematics will also be discussed.

W. Gary Martin<br>Auburn University, Alabama<br>Judith Quander<br>National Council of Teachers of Mathematics, Reston,<br>Virginia<br>Vincent Snipes<br>Winston-Salem State University, North Carolina

6 D (Convention Center)

101

## Why Are Word Problems So Much Easier than the Others? <br> (9-12) Session

This is an actual question from a student. Without context, students are working with abstractions and have nothing to suggest the approach to solving the problem. The speaker will provide examples of problems and contexts beginning in elementary algebra that will help students solve problems and develop concepts.
Guy Robert Mauldin
Science Hill High School, Johnson City, Tennessee
Marina G (Marriott)

## 102

## To the Vector Belong the Spoils (9-12, Higher Education) Session

Learn three unique ways to introduce vectors. Discover how MacDonalds can make understanding dot product easier. Glean unusual ways to use vectors in $d=r t$ problems, geometric proofs. and a dynamic projectile motion game on the TI-84. Plus, be surprised by simple AB and BC calculus applications that are not difficult to comprehend.

## William E. Rogge

University of Nebraska-Lincoln
Molly A/B (Hyatt)

## 103 <br> Oral Assessments: Retaining Students in Science, Technology, Engineering, and Mathematics (STEM) Majors (9-12, Higher Education) Session

In voluntary, ungraded oral assessments, students defend their reasoning and negotiate meaning with peers. Students learn to assess themselves, use multiple representations, and make important mathematical connections. Statistical analyses show that orals help underprepared students improve conceptual understanding and their retention in STEM majors.
Mary Ann Nelson
University of Colorado, Boulder
Gregory A/B (Hyatt)


Do not forget your name badge! Your name badge is needed to attend presentations and explore the Exhibit Hall.

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## 104

## Mathematics Teacher Education: Current Issues and Perspectives

(Higher Education) Session
Presidents' Series presentation
The session will highlight issues in the preparation of mathematics teachers, including a shortage of qualified secondary school mathematics teachers, strengthening mathematics preparation of elementary school teachers, and responding to public criticism of traditional teacher education programs. Ideas for addressing the issues will be shared.

## Barbara Reys

University of Missouri-Columbia
6 C (Convention Center)

## 105

## Algebra, the Connector Par Excellence! Connections within, between, and Among

 (Higher Education, Preservice and In-Service) SessionAlgebra is a now a way of thinking that cuts across content areas and unifies the curriculum. Demands on elementary school teachers to expose students to algebra early, and on middle and high school teachers to build on students' prior experiences, can be daunting. The speaker will use her research and writing to render them concrete.

Monica Neagoy
MN Mathematics Consulting Services, Arlington, Virginia 4 (Convention Center)

## EW 106

## Interactive Digital Texts Engage Students in Algebra

## (General Interest) Exhibitor Workshop

Use multiple forms of input to engage your students in algebra. Animations, audio, multiple self-assessment tools and more are built into a comprehensive digital text that has successfully completed the California state adoption.

## Kinetic Books

Kinetic Books, Seattle, Washington
1 B (Convention Center)

## EW 106.1

## Math Connections: A Standards-Based Mathematics Curriculum

## (General Interest) Exhibitor Workshop

This presentation will look at three activities that demonstrate how the standards-based program Math Connections helps students at all levels of ability achieve success in mathematics. We will show data on how schools have increased student results on state assessments-the greatest gains being for the lower-level students.

Jim Kearns
It's About Time, Armonk, New York
Torrey (Marriott)

## ew 107

## Scott Foresman-Addison Wesley enVisionMATH: The Next Generation of Problem Solving (K-6) Exhibitor Workshop

Are you ready to meet the needs of the next generation of learners in the mathematics classroom? Through activities in this exhibitor workshop, participants will learn strategies to engage a range of learners through problem-based interactive learning and pictorial representations for solving problems.

## Pearson

Pearson, Upper Saddle River, New Jersey
1 A (Convention Center)

# "Cracking the Code of Algebra" or "Cracking One's Head on Algebra" (4-9) Exhibitor Workshop 

How does Hands-On Equations® enable 80 percent of inner city fourth graders to have success with such basic equations as $4 x+3=3 x+10$ ? If algebra is a foreign language to your students, this presentation is for you!

Borenson and Associates, Inc.
Borenson and Associates, Inc., Allentown, Pennsylvania
Columbia (Marriott)

## 10:30 a.m.-12:00 noon

## 109

## Formative Assessment: A Pathway to Enhanced Learning

## (Pre-K-2) Gallery Workshop

In education, it seems that each day brings a new classroom practice that teachers need to embrace and implement with their students. A closer look at formative assessment may help you recognize how you are already enhancing learning through this important practice, as well as how you can more fully engage in and learn from it.

## Renee Everling

Math Solutions, Sausalito, California
16 A (Convention Center)

## 110

## A Glimpse of Singapore Math in the Primary Grades

## (Pre-K-2) Gallery Workshop

Come learn strategies from the Singapore Primary Mathematics Curriculum that will help build a strong foundation in mathematics. Participants will use various manipulatives to engage in activities that will help students develop logical-thinking and problem-solving skills. Activities will be provided.

## Johnette Roberts

City of Baker School System, Baton Rouge, Louisiana
Elizabeth Ballroom B (Hyatt)

## 111

## Math Takes Center Stage

(Pre-K-2) Gallery Workshop
Connect literature, standards, and drama to create a command math performance. Experience teacher created math theater activities that enhance students' learning. See how easily literature and drama can be infused into your teaching and leave with scripts, Web tools, and Web sites to produce your own class math videos.

## Charyl Kerns Hills

Council Rock School District, Newtown, Pennsylvania
Manchester Ballroom I (Hyatt)

## 112

## Designing a Shape Gallery: Making Geometry Connections for Primary School Students

## (Pre-K-2) Gallery Workshop

Explore activities from an NSF grant to create units based on Curriculum Focal Points, enrichment teaching, and learning strategies. Young students make connections between twoand three-dimensional shapes and explore symmetry and perspective as they create a shape gallery. Participants will leave with engaging, research-based activities.

## M. Katherine Gavin

University of Connecticut, Storrs
Tutita Casa
University of Connecticut, Storrs
Janine M. Firmender
University of Connecticut, Storrs
Marina F (Marriott)

## 113

## Using Visual Aids and Games to Develop Basic Fact Strategies

(3-5) Gallery Workshop
Students must be confident with a variety of computation methods. This presentation will show how mental computation can be developed using a sequence of strategies that begins with number facts and broadens as it extends to larger numbers. Participants will leave with many practical activities and games to use immediately in their classrooms.

## James L. Burnett

ORIGO Education, Saint Charles, Missouri
8 (Convention Center)

## 114

SMART Board ${ }^{\text {TM }}+$ Manipulatives $=\mathbf{A}$ Winning Combination
(3-5) Gallery Workshop
Success in math begins with the conceptual understanding of number sense. Manipulatives and the SMART Board are powerful tools that help lay the foundation for number sense. Participants will actively engage in hands-on activities that move students through the three levels of learning - concrete, transitional, and abstract.

## Carolyn Belson

Retired, Chesapeake Public Schools, Virginia
Sharon Huber
Chesapeake Public Schools, Virginia
Manchester Ballroom E/F (Hyatt)

## Stenhouse Books for Teaching Math tom

 Professional Resources at Linda Dacey B00TH \#923The Zeroing in on Number and Operations series features easy-to-use tools for teaching key concepts in number and operations and for addressing common misconceptions. Each book in the series, which is organized by grade level, provides thirty research-based, classroom-tested modules that zero in on the key mathematical strategies and concepts essential for that grade level while highlighting the importance of teacher language in the development of those skills. The spiral-bound, flipchart format makes it easy to access the important sections in each module, including:

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## 115

## Teach Problem Solving Using ThinkFun's Hands-On Program

(3-8) Gallery Workshop

This program will not only teach your students problem solving but also be the best part of their day! Use hands-on brain games and puzzles to teach problem-solving steps, strategies, and state of mind, the tools to empower students to tackle problems. Teacher-tested and approved, empowering students everywhere. Come play, learn, and be inspired!

Tanya Lee Thompson
ThinkFun, Inc., Alexandria, Virginia
15 A (Convention Center)

## 116

## Slow Down to Think Mathematically: Connecting Concepts and Context <br> (3-8) Gallery Workshop

This presentation will help teachers focus students on thinking mathematically rather than just getting to the right answer quickly. Participants will work on and discuss sample grades $4-8$ problems from Gillan's Problems without Figures and receive a copy of the book to use with their students.

## Patsy Wang-Iverson

Gabriella and Paul Rosenbaum Foundation, Stockton, New Jersey
Richard Askey
Retired, University of Wisconsin-Madison

## Marian Palumbo

Bernards Township Public Schools, Basking Ridge, New Jersey

Marina $E$ (Marriott)

## 117

## How Does Your Body Measure Up? <br> (3-8) Gallery Workshop

Not every classroom can have an X-ray machine or a CAT scan to look inside the body, and books can only provide a static representation. Using measurements like length, weight, and volume, students will begin to understand the true workings of the human body.

## Jeanine L. Haistings

William Jewell College, Kansas City, Missouri San Diego Ballroom A (Marriott)

118

## Visualizing and Mentally Calculating Percents <br> (3-8) Gallery Workshop

Attendees will create visual models of percents and then be able to calculate percents mentally. Next, attendees will solve word problems involving percents using number sense and not confusing algorithms. Finally, they will understand the relationships among percents, fractions, and decimals.

## Sandy Hindy <br> Ventura County Mathematics Council, California

3 (Convention Center)

## 119

## Maximize Technology: Meet the Challenge to Reach All Math Students

> (3-8) Gallery Workshop
> To meet learning needs effectively, see how teachers can use a broad range of strategies involving technology, manipulatives, and paper that integrate a variety of resources to promote deeper understandings of fractions, area, and algebraic thinking. Participants will receive a CD and a lesson to use in Monday's class.

Rudy Neufeld
Neufeld Learning Systems, London, Ontario, Canada
Manchester Ballroom A (Hyatt)

## 120

## Jump toward Better Understanding

 of Linear Functions through Multiple Representations
## (3-8) Gallery Workshop

Participants will experience the problem Jump Frog Jump and discover the power multiple representations have in developing algebraic thinkers. Jump Frog Jump addresses concepts of linear functions and rate of change from earliest grades through high school algebra. Hands-on activities and TI-73 calculators will be incorporated into the presentation.

## Gloria Beswick

Partnership Institute for Mathematics and Science Education Reform, Louisville, Kentucky
Rhonda Niemi
Jefferson County Public Schools, Louisville, Kentucky

## Nonstandard Units Are Custom Units: Linking Measurement to Proportional Reasoning

(3-8, Preservice and In-Service) Gallery Workshop

Nonstandard units arise in impromptu measurement and in traditional cultures where objects are custom-made for the user. They also introduce proportional thinking. Activities will involve body proportions, connecting body measurements to standard units, and reinterpreting mathematical topics through custom units. Bring scissors if possible.

## Susan Addington

California State University, San Bernardino
Madeleine Jetter
California State University, San Bernardino
Elizabeth Ballroom F (Hyatt)

## 122

## The Study of Change as a Preparation for Algebra

(6-8) Gallery Workshop
This opportunity to better understand and interpret graphs can help you provide students with knowledge they need to succeed in algebra and beyond. The antics of Wile E. Coyote, a race between a turtle and a rabbit, and graphing one's own motions will provide a venue for making sense of graphs

Susan Nickerson
San Diego State University, California
Judith Sowder
San Diego State University, California
17 A (Convention Center)

## 123

## Thinking Proportionally with Origami Cubes

## (6-8) Gallery Workshop

Participants will construct origami cubes and explore what happens to the surface area and volume of the cube when the dimensions of the initial square change. They will also engage in proportional-reasoning activities and discuss the rubrics based on these models.

## Diane Devine

Peabody Public Schools, Massachusetts
Betsy $A / B / C$ (Hyatt)

## 124

## Aha! Multiple Instructional Strategies That Build Concepts for All Students <br> (6-8) Gallery Workshop

Just when you think you've seen and heard it all: come join us and learn multiple instructional strategies that build solid math concepts for fractions, decimals, percents, and number operations for all students. Get ready to be involved with lots of differentiated activities. Walk away with a CD and lessons that you can use on Monday!

## Brenda Morgan

Houston Independent School District, Texas
Lisa Friedberg
Irvine Unified School District, California
Salon 6 (Marriott)

## 125

## Promote Positive Mathematical Dispositions with Games and Puzzles

(6-8, Preservice and In-Service) Gallery Workshop
Build productive dispositions-beliefs about abilities and the nature of mathematics. Promote proficiency, positive attitudes, and diligence through games, puzzles, and group problem solving.

Vicki Ann Vierra
Ventura County Office of Education, Camarillo, California
14 A (Convention Center)

## 126

## Unwrapping Surface Area <br> (6-12) Gallery Workshop

How are prisms and cylinders alike? How are pyramids and cones alike? Unwrap students' confusion by exploring 2-D nets! Use geofix manipulatives and common containers to develop an understanding of surface area and how to generalize the many formulas. Students' engagement, discourse, and a castle blueprint activity will be discussed.

## Laurie Boswell

The Riverside School, Lyndonville, Vermont
Elizabeth Ballroom G (Hyatt)

## 127

## Helping At-Risk Students Visualize Mathematics through Technology (6-12) Gallery Workshop

At-risk students struggle with visualizing math concepts. Using graphing software and interactive whiteboard technologies, the presenter will show how these technologies enhance students' understanding of algebra and geometry. The activities, professional development, and technology helped the presenter's district earn state and national awards.

## James William Kearns

Salem State Collaborative, Massachusetts
5 A (Convention Center)

## 128

## Building Conics with Patty Paper and on the TI-Nspire ${ }^{\text {TM }}$

(9-12) Gallery Workshop
Participants will use patty paper to fold the three conic sections - the parabola, ellipse, and hyperbola. Using the definition for each, and the techniques that were just used in the paper folding, the participants will create the envelope in which each conic sits and then find the actual conic (the set of points that fits the definition).

## Art Mabbott

Seattle Schools, Washington
11 A (Convention Center)

## 129

## Nspired ${ }^{\text {M }}$ Connections: Rich Tasks That Connect Concepts and Contexts

## (9-12) Gallery Workshop

Explore rich tasks, designed for the TI-Nspire, that investigate applications of mathematics to real-life contexts. The speaker will analyze these interactive tasks through multiple representations and the connections between them. See how inquiry and engagement can lead to deep mathematical thinking.

## Marc Garneau

Curriculum and Instructional Services, School District 36, Surrey, British Columbia, Canada

Marina D (Marriott)


## Real-World Investigations Connecting Data Analysis, Probability, and Statistics (9-12, Higher Education) Gallery Workshop

Does sleep deprivation impair students' performance two days later? Using experimental data, cards, and technology, investigate whether the results can be explained by chance. Did a company carry out a fair lottery to choose employees for promotion? Perform simulations to help decide.
Daren Starnes holds the endowed Master Teacher chair in Mathematics at the Lawrenceville School, where he teamteaches a course with a different colleague each term. He has led numerous AP Statistics institutes for new and experienced AP teachers and has been a reader, table leader, and question leader for the AP Statistics exam. From 2004 to 2009, he served on the ASA/NCTM Joint Committee on Statistics and Probability, chairing the committee in 2009.

## Daren Starnes

The Lawrenceville School, New Jersey
Douglas Pavilion C (Hyatt)

## 131

## The Fundamental Theorem of Calculus, Integration, and Differentiation: Putting It All Together

(9-12, Higher Education) Gallery Workshop
Working through a series of paper-and-pencil and technology-based classroom activities, participants will try hands-on investigations designed to help students improve their conceptual understanding of the fundamental theorem of calculus. Activities will focus on connections between integrally defined functions and their derivatives.

## Mike Koehler

Blue Valley North High School, Overland Park, Kansas
Manchester Ballroom G (Hyatt)

## 132

## Unfolding Mathematics from Geometry to Precalculus and Beyond

## (9-12, Higher Education) Gallery Workshop

This is not your parents' origami! Fold paper to explore and illustrate ideas from geometry, precalculus, and beyond. Investigations will include parabolas, ellipses, convergence, and regularity.

Paul J. Karafiol
Walter Payton College Prep High School, Chicago, Illinois
Scott Galson
Walter Payton College Prep High School, Chicago, Illinois
Salon 5 (Marriott)

133

## Nesting Boxes and Students' Work Samples: Building Teachers' Subject-Matter Knowledge of Geometry <br> (Preservice and In-Service) Gallery Workshop

The presenter's research study suggests that teachers' geometric reasoning and spatial sense can be enhanced when they analyze, categorize, and assess students' work samples. Attendees will become familiar with this research study, and they will engage in activities aimed at furthering teachers' mathematical subject-matter knowledge.

## Sherri Cianca <br> Niagara University, Lewiston, New York

9 (Convention Center)

## 134

Challenging Geometric Constructions with The Geometer's Sketchpad®
(Preservice and In-Service) Gallery Workshop
Strategies for discovering constructions that have proven unusually interesting to preservice and in-service high school teachers will be investigated. Constructions will include maxima and minima problems using transformations.

Shlomo Libeskind
University of Oregon, Eugene
Douglas Pavilion A (Hyatt)

## 11:00 a.m.-12:00 noon

135
Research-Based Practices and Practical Suggestions for Implementing Them in Your Classroom
(General Interest) Session
Many instructional practices are called "research-based," but are they really? Learn about important research-guided practices identified in the NCSM PRIME Leadership and Teaching Framework that can significantly increase students' achievement, the conditions under which they do so, and practical ideas for incorporating them into your instruction.

Diane J. Briars
National Council of Supervisors of Mathematics, Pittsburgh, Pennsylvania

6 B (Convention Center)

## LOR 136

## Building Math and Science Connections in Preschool and Kindergarten

## (Pre-K-2) Session

Teachers will discuss how to integrate concepts in science and mathematics through an analysis of the content and process standards. They will investigate developmentally appropriate activities to determine connections and discuss how to foster cognitive process in preschool and kindergarten age children.

Glenda Pepin<br>Clemson University, South Carolina<br>Sandra Mammano Linder<br>Clemson University, South Carolina

11 B (Convention Center)

## 137

## The National Research Council (NRC) Report on Early Mathematics

## (Pre-K-2, Higher Education) Session

The NRC recently completed a study of early childhood math, synthesizing and analyzing the past twenty years of research from a number of disciplinary fields. The authors of the report will draw implications for practice and policy that will help all children, especially vulnerable children, get a strong start in learning math.

## Douglas H. Clements

University at Buffalo, State University of New York
Sybilla Beckmann
University of Georgia, Athens
Karen C. Fuson
Northwestern University (Emerita), Evanston, Illinois
Herbert P. Ginsburg
Teachers College Columbia University, New York, New York Julie Sarama
University at Buffalo, State University of New York
6 A (Convention Center)

## LER 138

## Assessing Mathematical Understanding: Using One-on-One Mathematics Interviews with Grades K-2 Students

## (Pre-K-2, Higher Education, Preservice and InService) Session

High-quality mathematics experiences in the primary grades build a strong foundation for future learning. This session will share useful assessment tasks along with video clips of grades $\mathrm{K}-2$ students that help teachers understand what to ask and what to look for when assessing their students.

## Linda Griffin

Northwest Regional Educational Laboratory, Portland, Oregon

## Lisa Lavelle

Education Northwest, Portland, Oregon
17 B (Convention Center)

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## 139

## Math Fact Fluency: How and Why We Teach for Flexible Thinking

(Pre-K-5) Session
This session will provide participants with multiple instructional strategies, activities, and games that can be used to help students develop fluency with addition, subtraction, and multiplication facts. All suggested strategies are based on significant research and have been successfully applied in public schools serving diverse populations.

## Sam Strother

Boise State University, Idaho
16 B (Convention Center)

## 140

Communicating Mathematical Thinking: Young Problem Solvers Show What They Know
(Pre-K-5) Session
How do young students use math materials, pictures, numbers, and words to show what they know? Examples of how students solved a variety of open-ended, literaturebased mathematical problems will be shared. A focus of the problem-solving experiences was having students communicate their mathematical thinking and showing how they solved the problem.

Janice Novakowski
Richmond School District, Vancouver, British Columbia, Canada

Manchester Ballroom B (Hyatt)

## 141

## Math for All! Equal Opportunity Education in the Math Classroom

## (Pre-K-5, Preservice and In-Service) Session

Have a better understanding of how to differentiate math instruction easily to meet the needs of a variety of learning styles. Learn how to implement these strategies into classrooms through a variety of engaging activities that are motivating for learners using few or inexpensive, easy-tomake materials.

Marilyn R. Lance<br>Houghton Mifflin Harcourt, Austin, Texas<br>Nicole Hamilton<br>Houghton Mifflin Harcourt, Boston, Massachusetts

Edward A/B/C/D (Hyatt)

## 142

## Supporting English Language Learners (ELLs) in Math Class

## (Pre-K-5, Preservice and In-Service) Session

Discussing ideas in math class facilitates understanding, but ELLs may be at a disadvantage. This session will show teachers how to structure experiences so ELLs can accomplish two goals-developing their mathematical thinking and, at the same time, developing proficiency in English.

## Bernard George Bresser

University of California at San Diego

## Kathy Melanese

University of California at San Diego

## Salon 1/2 (Marriott)

## 143

## Algebra in Elementary School? (Pre-K-5, Preservice and In-Service) Session

Many in-service teachers have difficulty recognizing that many of the topics and concepts they currently teach are actually preparing their students for success in formal algebra. What does algebra look like in grades K-3? How can we prepare teachers to take advantage of opportunities to nurture algebra skills in students at lower grades?

[^0]
## 144

## Building a Community of Mathematical Thinkers through the Use of Math Olympiad Problems <br> (3-5) Session

The speaker will explore rich problems provided by the Math Olympiad for Elementary and Middle School students and discuss how these problems are used to create an environment of mathematical thinkers. She will also share her experience as the coach of a team of grades 4-6 students and provide a packet of sample problems and solutions.

## M. Lynn Breyfogle

Bucknell University, Lewisburg, Pennsylvania
6 D (Convention Center)

## 145

## Speaking the Language of Mathematics <br> (3-5, Preservice and In-Service) Session

Talking about math ideas helps students expand their understanding, but talking about math is not easy. Math has a complicated language with challenging vocabulary that tests even the most capable students. This session highlights classroom-tested, research-based, vocabulary strategies that are interactive and fit in any math program.
Susan O'Connell
Quality Teacher Development, Ellicott City, Maryland

## Marina G (Marriott)

## LCR 146

## Quilts, Topology, Origami, Tessellations, and More: Connecting Mathematics with Art

(3-8) Session
Art is full of amazing connections with mathematics! The speaker will share ideas of how to connect mathematics to art in elementary school classrooms using a variety of activities. These activities will include quilts, topology, origami, tessellations, pop-up cards, geometric sculpture, and more. He will also share examples of students' work.
Elaine Tuft
Utah Valley University, Orem

## LOR 147

## You Are What You Eat: Integrating Science and Mathematics

## (3-8) Session

This session will explore research based activities integrating science and mathematics in the context of smart energy choices. Students will transform into researchers who ask the important questions related to nutritional choices, purposefully collect and analyze data, and then professionally report their findings.

## Sarah Selmer

West Virginia University, Morgantown

## Johnna Bolyard

West Virginia University, Morgantown
Jim Rye
West Virginia University, Morgantown
15 B (Convention Center)

## 148

 <br> \section*{Building a Foundation for Understanding <br> \section*{Building a Foundation for Understanding Fraction Operations: Using Concrete Contexts}(3-8) Session
Misconceptions are common with fraction operations. The use of context can assist in dispelling common misconceptions. This session will examine the use of context in teaching fraction operations, particularly multiplying and dividing fractions. Solving and creating context problems will be examined.

Janet Andreasen
University of Central Florida, Orlando
Jennifer M. Tobias
Illinois State University, Normal
Elizabeth Ballroom A (Hyatt)

## 149 <br> Differentiated Instruction for Conceptual Understandings

(3-8) Session
This session presents a variety of instructional processes for differentiation, including C-R-A and scaffolded questioning, aligned differentiated assessments for progress monitoring, and multiple product representations. Specific examples and tools to implement differentiated instruction systematically for conceptual understandings will be shared.

## Jodi O'Meara

Jodi O'Meara, Inc., Parrish, Florida
Elizabeth Ballroom H (Hyatt)

## LCR 150

Speaking, Writing, and Problem Solving (3-8, Preservice and In-Service) Session
Try "speak, write, reflect, revise"-a cooperative learning process that effectively connects problem solving with rich classroom discourse and writing. See how every student contributes to a classroom of successful problem solvers and how students' written words guide math instruction. Do this tomorrow in your classroom!
Robyn Silbey
Montgomery County Public Schools, Gaithersburg, Maryland 10 (Convention Center)

## LOR 151

## Algebra Connections: Developing Students' MP ${ }^{3}$ (Mathematical Passion, Perseverance, and Promise)

## (6-8) Session

Participants will explore problems and investigate related extensions designed to develop the passion, perseverance, proficiency, power, and promise of a wide range of students, using algebraic reasoning and multiple representations to analyze patterns, make predictions and generalizations, and develop recursive and explicit rules and formulae.

Linda Jensen Sheffield
Northern Kentucky University (Emerita), Highland Heights 5 B (Convention Center)

## 152

## I Notice, I Wonder, I Can Think! <br> (6-8) Session

Develop students' ability to think through technology and challenging, complex problems. Empower your students with the power of thinking. Focus on questions and observations as a method leading to problem-solving skills. Redirect students from solution-orientated thinking to reasoning and inquiry as a method to developing problem-solving skills.

## Barbara Delaney

Bellingham Memorial Middle School, Massachusetts
Ashley C. Miller
China Grove Middle School, North Carolina
Marie Hogan
Traweek Middle School, West Covina, California
Salon 3 (Marriott)

## 153

## Aim for Algebra: Algebra InterventionNot Business as Usual

## (6-12) Session

Aim at intervention: learn about essential elements for algebraic intervention by examining a successful, conceptually based, standards-aligned program that supports struggling students through modules targeting common barriers to algebraic success, provides teacher support for each lesson, and implements flexibly for grade levels and schedules.

## Mardi A. Gale

WestEd, Redwood City, California
20 D (Convention Center)

## 154

## Bringing Connections to the Pythagorean

 Theorem "Full Circle"
## (6-12) Session

Examining connections between, and representations of, mathematical ideas is vital if students are to visualize concepts rather than memorize formulas. See how visualizing connections among the Pythagorean theorem, the distance formula, and the equation of a circle helps connect ideas, enhancing the transfer of knowledge to new situations.

## Cheryl Malm

Northwest Missouri State University, Maryville

## Christine C. Benson

Northwest Missouri State University, Maryville
6 F (Convention Center)

## 155

## Using Mathematics in Tennis

## (6-12) Session

Much mathematics is included in tennis-measurement, geometry, data, and algebra. This session will offer many ideas that show how mathematics can be used when playing tennis.

## Robert Reys

University of Missouri-Columbia

## Rustin Reys

Park Hill High School, Ka nsas City, Missouri
San Diego Ballroom B (Marriott)

## LOR 156

## Math Is All around You

(6-12) Session
Mathematics learning is enhanced when your students make the connections across mathematics topics and across different subject areas. See lessons that connect algebra, probability, science, social studies, language arts, and more!

Fred Dillon
Board of Directors, National Council of Teachers of Mathematics; Strongsville City Schools, Ohio

14 B (Convention Center)

## LOR 157

## Connect with Mathematical Curves in the

 Real World
## (6-12) Session

Conic sections, spirals, catenaries, fractals, and other curves will be presented in many different ways, (some humorous, some real), with hands-on activities, digital photos, and calculator/computer applications. Connections within mathematics and other sciences will be a main focus.

## Scott Oliver

Adlai E.Stevenson High School, Lincolnshire, Illinois
4 (Convention Center)

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158

## Why Should We Assign Homework in Math? <br> (6-12) Session

The speaker will share the numerous types of assignments he has used in classes ranging from Algebra 1 through AP Calculus BC. He will discuss what some of the research says, and what it does not, about homework, and there will be an opportunity to share what practices have worked for other participants.

## James Wysocki

Chadwick School, Palos Verdes Peninsula, California
Salon 4 (Marriott)

## 159

## Coaching in an Urban District: Math + Science + Coaching = Success

(6-12) Session
How can you create an effective professional learning community in a large, urban district? The speaker will share the program design and interim results of an ongoing math and science professional development and coaching academy. Teams of teachers increase their content and pedagogy knowledge and cultivate leadership skills.

## Wanetta Jones-Allen

Houston Independent School District, Texas

## 160

## Connecting Vocabulary and Conceptual Understanding: Strategies, Assessments, and Research Findings

## (6-12, Higher Education) Session

Vocabulary strategies promoting conceptual understanding and examples of students' work done in middle school through college algebra will be shared. The speakers will discuss assessments that provide diagnostic information and share research findings on students' understanding of primary concepts such as equation, exponent, domain, and function.

## Susan Gay

University of Kansas, Lawrence
Ingrid Peterson
University of Kansas, Lawrence
7 B (Convention Center)

161

## Let's Talk Mathematics: Supporting Mathematical Discourse in Your Classroom

(6-12, Preservice and In-Service) Session
This presentation focuses on specific discourse moves that teachers can use in order to support students' learning during mathematical discussions. During this session, teachers will analyze an episode of teaching that illuminates these discourse moves and then discuss how to implement these moves in their classroom.

Amy F. Hillen
Kennesaw State University, Georgia
Elizabeth Hughes
University of Northern Iowa, Cedar Falls
Douglas Pavilion D (Hyatt)

## 162

## Now That Calculators Can Do Algebra, What Is Left to Learn in Algebra Class? (9-12) Session

Affordable calculators can now do most of the operations that once formed the core of the algebra curriculum; however, there is plenty left to learn, and many tasks that only people can do. Take a look at how to harness the new power and to clarify what we still need to learn and do ourselves.

## Loring Coes

Rocky Hill School, East Greenwich, Rhode Island
Douglas Pavilion B (Hyatt)

## 163

## So You've Got a SMART™ Board: Now What?

## (9-12) Session

This session will demonstrate and discuss various ways to use your SMART Board for teaching and learning mathematics, from algebra to calculus, including use of SMART Notebook Math, the new notebook software for mathematics classrooms. Bring your successful SMART Board strategies to share with others, too!

## Roger Day

Lead Author, McGraw-Hill K-12 Mathematics, Pontiac, Illinois
Chad Shepherd
Pontiac Township High School, Illinois
Brian Schmalzer
Glenbrook South High School, Illinois
Tami S. Martin
Illinois State University, Normal
Manchester Ballroom C (Hyatt)

164

## Mathematics in the NBA Draft, Electoral College, and Olympic City Voting

## (9-12) Session

The NBA draft lottery uses combinatorics and probability to order the teams. The electoral process uses apportionment to determine presidential elections. The voting for a host city uses an application of elimination-method voting. These three examples provide a context for students to see mathematics outside the classroom.

## Anthony W. Griffith

Westminster School, Simsbury, Connecticut
Manchester Ballroom H (Hyatt)

## 165

## Making Sense of Data Analysis

## (9-12, Higher Education) Session

This presentation will focus on how some specific data sets have been used in an elementary statistics class to help students make sense of and understand the statistical processes used to obtain and interpret the results. Strategies on how to teach for understanding and make sense of the processes using these data sets will also be discussed.

## Martha Tapia

Berry College, Rome, Georgia
20 A/B/C (Convention Center)

## 166

## High School High-Stakes Testing and Remedial Math in College

## (9-12, Higher Education) Session

Is there a mismatch between success on high-stakes high school tests and college expectations? Come learn about the results of survey research on secondary school and teachers' practices that may explain the paradox of higher test scores and increasing numbers of students requiring remediation in college.

## Laura Bridge

Greater Richmond Council of Teachers of Mathematics, Richmond, Virginia

Elizabeth Ballroom D/E (Hyatt)

167

## The Impact of High School Curricula on College Mathematics Achievement and Course-Taking Patterns

## (9-12, Higher Education) Session

Results will be discussed of an ongoing, four-year, multiuniversity, NSF-funded research project examining college-level mathematics ach ievement, persistence, and course-taking patterns as a function of students' high school curricula. Thirty-five higher education institutions and 27,000 students are represented in the data.

Tom Post<br>University of Minnesota-Twin Cities, Minneapolis<br>Michael Harwell<br>University of Minnesota-Twin Cities, Minneapolis

Manchester Ballroom D (Hyatt)

168

Exploring Grades 10-12 Teachers' Beliefs
about Mathematics, Teaching, and
Learning
(9-12, Higher Education, Preservice and In-Service) Session

What are grades $10-12$ teachers' ideas and beliefs about mathematics education and the reform movement? This session will give an opportunity to explore our beliefs about mathematics, teaching, and learning, and to learn more about the many paradigms of mathematics education. Explore beliefs using clicker technology.

## Lorraine M. Baron

Central Okanagan School District, Kelowna, British Columbia, Canada

## 169

## A Secondary School Preservice Teacher Content Course Focused on Problem Solving

(Higher Education) Session
To strengthen licensure and students' knowledge of high school curriculum and ground investigation in good practice, the speakers created a course based in problem solving, reasoning, and critical thinking. Participants will experience rich problems, see students' reflections from the course, and discuss the impact on teacher education programs.

Janet Mays
Elon University, North Carolina
Alan Russell
Elon University, North Carolina
Amanda Ketner
Elon University, North Carolina

Manchester 1/2 (Marriott)

CW 172
Interactive Whiteboard in an Inquiry-Based Classroom
(K-5) Exhibitor Workshop
Are you looking to utilize an interactive whiteboard in an inquiry-based classroom? Learn how to use activities on your interactive whiteboard to bring new depth to your class.

Pearson
Pearson, Upper Saddle River, New Jersey
1 A (Convention Center)

## CW 172.1

## The Cutting Edge of Singapore Math: Problem Solving, Creative Thinking, and Enquiry Thinking <br> (1-6) Exhibitor Workshop

This exhibitor workshop describes important Singapore approaches that have shown results in inculcating mathematical problem solving skills, creative thinking, and enquiry thinking. Participants will have the opportunities to learn various methods that help students excel in mathematics grades 1-6.

## Fong Ho Kheong

Houghton Mifflin Harcourt, Boston Massachusetts
Columbia (Marriott)

## eW 173

## Math Upgrade Interactive Prealgebra Lessons Using Songs, Video, and Games

 (3-8) Exhibitor WorkshopMath Upgrade features music and animation to make prealgebra concepts understandable. Find out how teachers transform their classes using interactive, whole-class lessons and individual online courses. Join us for math, music, and fun!

Learning Upgrade LLC
Learning Upgrade LLC, Escondido, California
1 B (Convention Center)

## 12:30 p.m.-1:30 p.m.

## 174

## The Common Core Standards Initiative

(General Interest) Session
Building on crucial work of NCTM and others, the National Governors Association, the Council of Chief State School Officers, and 48 states have begun developing common standards in mathematics. Participants will learn about the effort and discuss how NCTM members can play an active role in implementation of these standards across the states.

Dane Linn
National Governors Association, Washington, D.C.
Gene Wilhoit
Council of Chief State School Officers, Washington, D.C.
20 A/B/C (Convention Center)

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## 175



Math and Philosophy: What did Plato, Kant, and Russell Think about Mathematics?
(General Interest) Session
The speaker will discuss what the great philosophers thought about mathematics and see if their thinking is still relevant in today's world.

Kichoon Yang
Executive Director, National Council of Teachers of Mathematics, Reston, Virginia

6 D (Convention Center)

## 176

Fixing 27 Common Myth-Takes of 23 MythConceptions in 42 Myth-Tical Minutes

## (General Interest) Session

Presidents' Series presentation
Beginning with the misunderstanding of the number line through the operations, algebra, and on to calculus, here are the causes (and the cures) for the most common errors in mathematics by students.

## Alan Zollman

School Science and Mathematics Association, DeKalb, Illinois

Manchester Ballroom B (Hyatt)

## LER 177

## Can Grades Pre-K-2 Students Use

 Algebraic Reasoning?(Pre-K-2) Session
Participants will explore the main concepts of algebraic reasoning with connections to literature and problem solving. Activities will include students' work from the NCTM Navigating through Algebra series.

Donna E. Weaver
Norfolk Public Schools, Virginia
Diana J. Batliner
Norfolk Public Schools, Virginia

LOR 178
Project M ${ }^{2}{ }^{2}$ s Approach: Connecting Math and Language Arts through Communication
(Pre-K-2) Session
Learn how to implement the cornerstones of a balanced language arts program to encourage high-level math thinking. Participate in discussion-based activities and review writing from students in urban and suburban classes that developed their knowledge of advanced math ideas along with their reading, writing, listening, and speaking skills.

Tutita Casa
University of Connecticut, Storrs
M. Katherine Gavin

University of Connecticut, Storrs
Janine M. Firmender
University of Connecticut, Storrs
16 B (Convention Center)

## 179

## Measuring Number Sense in Preschoolers through a Curriculum-Based Measure

## (Pre-K-2) Session

This research evaluated a curriculum-based assessment of number sense (quantification, counting, set comparison, numerals, addition, patterning) in preschool children. The measurement tool is an interactive game played between assessor and child. Factor analysis indicated the tool is valid and reliable for teachers to use to guide instruction.

Sally Moomaw
University of Cincinnati, Ohio
6 F (Convention Center)

## 180

## Effects of a Professsional Development Intervention on Low-Income Children's Knowledge of Mathematics and Teachers' Practice

## (Pre-K-2) Research Session

This presentation will describe a prekindergarten mathscience curriculum, the professional development of Head Start teachers, prekindergarten children's outcomes, and findings from the first three years of data collection. Suggestions for helping teachers become successful facilitators of math-science activities will be shared.

## David Brown

Texas A \& M University-Commerce
Gregory A/B (Hyatt)

## LOR 181

## Generating Mathematical Discourse: Establishing an Environment That Supports Mathematical Proficiency

(Pre-K-5) Session
Teachers who have successfully established discourse-based learning environments will share selections from classroom videos of mathematics lessons. They will discuss strategies they use for teaching children to discuss, listen, and learn from each other.

## Lisa Ann de Garcia

Brigham Young University, Provo, Utah
Amy Smith
San Diego Unified School District, California
Adriane Stewart
San Diego Unified School District, California
Jeralyn Treas
San Diego Unified School District, California
Stephanie Hasselbrink
San Diego Unified School District, California
5 B (Convention Center)

## 182 <br> Concept Mapping for Mathematics Connections: Linking Concepts and Context

(Pre-K-5, Preservice and In-Service) Session
Attendees will be provided with an opportunity to engage actively in hands-on/minds-on "concept mapping" assessment techniques in mathematics that will reach students at the concrete, pictorial/representational, and symbolic levels. Critical thinking, problem solving, and decision making will be emphasized while connecting math concepts.

Nancy L. Gallenstein
Coastal Carolina University, Conway, South Carolina
Marilyn Larmon
University of Southern Mississippi, Hattiesburg
6 B (Convention Center)

## From Concrete Manipulatives to Abstract Numeric Symbols: Bridging the Gap

(Pre-K-5, Preservice and In-Service) Session
Many students have difficulty moving from manipulatives to numeric representations. This discussion will attempt to convert the giant leap from concrete to abstract into a series of small, manageable steps. This technique uses schematic representations in which each representation is just slightly more abstract than the one before it.

## Arlene Goldblatt <br> Southern Connecticut State University, New Haven

2 (Convention Center)

## 184

Home and School Connections: Presidential Award Teachers Share Ideas! (Pre-K-8) Session
Learn how experienced math teachers involve parents and community. Find ways to help parents understand where their children are headed, what students should know, and what they be able to do. Hear how parents' involvement affects learning. Discover resources for teachers and parents from NCTM and the U.S. Department of Education. Some are free!

## Sara Normington

Catlin Gabel School, Portland, Oregon
Lisa K. Cartwright
Pullman School District, Washington
Lisa M. Hall
Jacob L. Adams Elementary School, Richmond, Virginia
Stacie Kaichi-Imamura
Hawaii Department of Education, Honolulu
Leslie Marrie Lasater
Campus School, Middle Tennessee State University,
Murfreesboro
Sandy Schoff
Anchorage School District, Alaska
Martha C. Short
Consultant, Jackson, Missouri
Joy Wolfe
Rogers Public Schools, Arkansas
Elizabeth Ballroom H (Hyatt)

## 185 <br> Mathematical Stretches: Math Warm-Ups to Begin the Day <br> (Pre-K-8, Preservice and In-Service) Session

Athletes know the wisdom of beginning their workouts with stretching so they can maximize their performances. The same is true for students. This session will offer specific ideas for easily implemented "math stretches," in which students draw on their background knowledge and make math connections as they warm up for math with brief tasks.

Laney Sammons
Hubbard Elementary School, Forsyth, Georgia
Elizabeth Ballroom C (Hyatt)

186

## Being SMART ${ }^{\text {TM }}$ in Your Math Lessons <br> (3-5) Session

Participants will see how to use the SMART Board as a mathematical tool, from manipulatives to timers and other interesting features. Come learn how to enhance your classroom.

Adam Meador
Bingham Elementary School, Springfield, Missouri
Manchester Ballroom C (Hyatt)

## 187 <br> Exploring Logic Problems with Elementary School Students <br> (3-5, Higher Education, Preservice and In-Service) Session

Many students have difficulty solving word problems involving logic. This presentation will describe a lesson that gives students in the primary grades the opportunity to explore a variety of solution strategies to a logic word problem.

## Zhixia You

University of Nevada, Reno
Robert J. Quinn
University of Nevada, Reno
6 E (Convention Center)

## LOR 188

## Fractions and Geometry with Manipulatives

(3-5, Preservice and In-Service) Session
Help your students develop visual, proportional, logical, and algebraic thinking skills to deepen their understanding of fraction and geometry concepts using manipulatives such as tangrams, pattern blocks, and a few new surprises.

## Barbara Irvin

Consultant, Plano, Texas
15 B (Convention Center)

## 189

## Differentiating Instruction in the Middle School Mathematics Classroom

## (3-8) Session

Participants will gain insight into ways differentiated instruction can be effectively implemented into their classrooms. Differentiating instruction can be an overwhelming task to both new and veteran teachers. This presentation will give teachers ideas on how to meet their students at challenging and motivating levels.
John T. Neral
Oakland Public Schools, New Jersey
Salon 4 (Marriott)

## 190

## Around the World in 60 Minutes: A Cultural Excursion through Probability

## (3-8, Preservice and In-Service) Session

Play probability games from diverse cultures around the world. Analyze situations using applets and simulations; record data using graphs, trees, and lists to relate theoretical and experimental probability. Take a quick glimpse at pop culture through the Monty Hall problem and more! Souvenirs will provided at the end of the tour.

## Nirmala Naresh

Miami University, Oxford, Ohio
Iris DeLoach Johnson
Miami University, Oxford, Ohio
6 C (Convention Center)

## 191

## What's Your Mindset? Transforming Mathematics Learning through Emerging Technologies

## (3-12) Session

Emerging technologies are often not yet widely adapted or fully actualized, but hold the potential to engage learners, deepen their understanding, and extend mathematical and real-world connections. Learn more about some tools and devices that show remarkable promise for transforming the mathematics classroom.

## Jon Wray

Howard County Public Schools, Ellicott City, Maryland
Manchester 1/2 (Marriott)

## 192

## Strategy Games for the Last Five Minutes of Class

(3-12) Session
Sometimes you finish a lesson early and don't want to start something new. Learn some mathematics games that are a good use of time. The winning strategies will be explored during the session.

## Diane Resek

San Francisco State University, California

## 193 <br> Using Geometry as a Lens for Exploring Other Content Strands

## (3-12, Preservice and In-Service) Session

Learn to integrate concepts that are too often viewed in isolation by using geometry as the organizing agent. Geometry is a driving focal point for fundamental concepts of number, algebra, measurement, data analysis, and probability. See how a myriad of concepts take on a new life and richer meaning when viewed through a common lens.

William Renwick Speer
University of Nevada, Las Vegas

## Marina G (Marriott)

## LOR 194

## Problem Solving and Technology Implementation in an Inclusion Classroom

 (6-8) SessionLearn how the speakers are creating a problem-solving environment in classrooms that include English language learners and special-education students. They will share problems and accompanying activities-some of which use Sketchpad, applets, and other technology-that can help turn students into problem solvers.
Annie Fetter
The Math Forum @ Drexel, Philadelphia, Pennsylvania
Michelle O'Donnell
Woodlynne School, New Jersey
14 B (Convention Center)

## LSR 195

## Bringing Math to Life with History (6-8) Session

Have you ever wondered where mathematics comes from? Providing a historical context to the math you teach can help students to make connections among people, places, and ideas. Integrating history and biography into your middle school math classroom can help you engage students in learning standards-based content and concepts.

Christine Latulippe
California State University Polytechnic, Pomona
4 (Convention Center)

## 196

## Teaching for Understanding with Mathematics Teaching in the Middle School (MTMS) <br> (6-8) Session

The MTMS journal provides opportunities for educators to reach students of all abilities while teaching for understanding. Presenters will share classroom-tested ways they have used the journal to challenge students while building conceptual knowledge.
Mathematics Teaching in the Middle School Editorial Panel
National Council of Teachers of Mathematics, Reston, Virginia

7 B (Convention Center)

## George J. Roy

University of South Florida-Saint Petersburg
Farshid Safi
College of New Jersey, Ewing
Douglas Pavilion B (Hyatt)

## 198

Binary System, Braille Alphabet,
Wordplay, Jon Arno Lawson's Poetry, and Mathemagic
(6-8) Session
The speaker will explore diverse and unexpected places where the binary system appears, such as the Braille alphabet; recreational wordplay; the underlying structure of The Voveller's Bestiary, a children's poetry book by poet Jon Arno Lawson, numerical patterns; mathematical magic tricks; and shuffling a deck of cards.

## Ron Lancaster

University of Toronto, Ontario, Canada
Elizabeth Ballroom D/E (Hyatt)

199

## Connecting Logarithms to Logistics: Mathematics Activities for Global Competitiveness <br> (6-12) Session

How can you introduce your students to the high-paying careers of the future and make them globally competitive while teaching to national standards? This hands-on session introduces activities from a context-based, grade 6-12 mathematics curriculum that integrates supply chain and logistics concepts to increase relevancy and students' engagement.

Allison Medley<br>North Canton City Schools, Ohio<br>Leslie Gardner<br>University of Indianapolis, Indiana

Edward A/B/C/D (Hyatt)

## LSR 200

Quantitative Reasoning in Science, Technology, Engineering, and Mathematics (QR in STEM): Integrated Science and Mathematics
(6-12, Higher Education) Session
QR in STEM is a mathematics and science partnership project that integrates biology, chemistry, earth sciences, physics, and mathematics in the context of energy and environment. The speakers will share performance tasks developed through a collaboration of scientists and teachers and provide the evidence of impact on students' learning.

## Robert Lee Mayes

Science and Mathematics Teaching Center, University of Wyoming, Laramie
Jim Verley
University of Wyoming, Laramie
17 B (Convention Center)

## LOR 201

## Using Mathematics to Help Cure Hunger, Disease, and Global Warming <br> (9-12) Session

Solar cookers can help with global warming while reducing disease and hunger. The focal property of a parabola makes it a good shape for a solar cooker that can be repositioned to point directly at the sun. Examine alternatives to the parabola for the shape of a solar cooker made of clay and aluminum foil that cannot be moved.

## Philip Todd

Saltire Software, Tigard, Oregon
Irina Lyublinskaya
City University of New York-College of Staten Island
11 B (Convention Center)

## 202

## Geometric Means, and What They Mean

 (9-12) SessionThe geometric mean is a versatile concept, with applications in dynamic processes, exponential growth, and higher-dimensional geometry. Participants will learn surprising properties of geometric means, generalizations you have probably never seen, and strategies for incorporating them across the curriculum from algebra to calculus.

## Michael Weiss <br> Oakland University, Rochester, Michigan

6 A (Convention Center)

## 204 <br> Proof! Finally, a Logical Approach! <br> (9-12) Session

The development of proof begins with deductive reasoning by way of games. The goal is to use communication, reasoning and logic skills needed in proof. Participants will justify and argue strategies as they come to conclusions. Three types of proof will be modeled: flowchart, paragraph, and twocolumn.

## Mark Noel Cote

Beaver Lake Middle School, Issaquah, Washington
Elizabeth Ballroom A (Hyatt)
205

## Solving a Mystery: Who Wrote the Disputed Federalist Papers?

(9-12) Session
Disputes about authorship arise in the press, the legal system, and even among historians. One such dispute was a "mystery" concerning some famous documents in United States history, the Federalist papers. Find out how frequency distributions were used to investigate this mystery and connect mathematics to social science.

## Natalie Jakucyn

Glenbrook South High School, Glenview, Illinois
Manchester Ballroom D (Hyatt)

## 206

## Assessing More than Procedures without Losing Your Weekend <br> (9-12) Session

If conceptual understanding is not assessed, then students will not value it. The speaker will explore assessing conceptual understanding without overburdening teachers. Examples of items assessing conceptual understanding and students' related work will be shared. Participants will write items that assess conceptual understanding.

## Rebecca K. Walker

Grand Valley State University, Allendale, Michigan
San Diego Ballroom B (Marriott)

## 207 <br> Computer Algebra Systems (CAS): From Where Did They Come, and Where Might They Go?

(9-12, Higher Education) Session
Beginning on mainframes, CAS evolved to desktop versions and into handheld computers. What is CAS, and what has been its impact on teaching and learning? What might mathematics educators expect from CAS in the future? Ideas from those involved in the development of CAS will be shared, and audience speculation about the future will be encouraged.

## Ed Dickey

University of South Carolina, Columbia
20 D (Convention Center)

## 208 <br> Striving to Teach Mathematics for Social Justice: A Learning Experience

## (9-12, Higher Education) Session

Teaching math for social justice, or using math as a way to understand and critique the world, is an exciting idea. Educators, however, may be intimidated at the prospect of creating lessons that use local contexts to engage all students in learning math. This session will show an attempt at adapting a Standards-based curriculum to create such a lesson.

## Joel Amidon

University of Wisconsin-Madison
Salon 1/2 (Marriott)

ew 212

## Algebra Upgrade Interactive Lessons: Using Songs, Video, and Games (9-12) Exhibitor Workshop

Algebra Upgrade features music and animation to make challenging concepts understandable. Find out how teachers transform their classes using interactive whole class lessons and individual online courses. Join us for algebra, music, and fun.

## Learning Upgrade LLC

Learning Upgrade LLC, Escondido, California
1 B (Convention Center)

1:00 p.m.-2:30 p.m.

## 213

## Numerical Reasoning in First Grade <br> (Pre-K-2, Higher Education, Preservice and InService) Gallery Workshop

The presenter will share an instructional sequence using the arithmetic rack, which helps children develop numerical relationships. Video clips of the instruction will show how children moved away from unitary counting to using mentalreasoning strategies of five-referenced and ten-referenced numbers and doubles for addition and subtraction.

Patty King
U.S. Math Recovery Council, Nashville, Tennessee

9 (Convention Center)

## 214

## Shuffling into Math: Primary School Math Games Using Cards and Dice (Pre-K-5) Gallery Workshop

Come prepared to play card and dice games that help your primary school students achieve success in basic numeration, operations, place value, and graphing. Excellent ideas for implenting a math games component into your regular and after school programs will be shared. Reproducible gameboards and students' samples will be provided.
Jane Felling
Box Cars \& One-Eyed Jacks, Edmonton, Alberta, Canada
Elizabeth Ballroom F (Hyatt)

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## 215

## Shazam! Students Creating Math Story Problems Using Graphic Literature <br> (Pre-K-5) Gallery Workshop

Attendees will experience integrating the use of several graphic novels and other graphic texts into the math curriculum. The presenters will show how students can develop their own math problem-solving stories. Come prepared to laugh, enjoy, and explore math concepts using the latest literacy phenomenon in children's texts.

## Robyn B. Rhodes

Bushland Independent School District, Texas
Gina D. McCown
Bushland Independent School District, Texas
Beverly Sutterfield
Bushland Independent School District, Texas
San Diego Ballroom A (Marriott)

## 216

H Response to Intervention: Supporting Struggling Learners with Differentiated Instruction and Intensive Interventions

## (Pre-K-8) Gallery Workshop

Are you looking for ways to support students who struggle with mathematics? Join the speaker as she discusses evidence-based strategies for providing intensive interven-
tions. Engage in hands-on activities, hear ideas for organizing the classroom to provide differentiated support, and receive handouts containing references and resources.

## Linda Forbringer

Southern Illinois University Edwardsville
Douglas Pavilion C (Hyatt)

## 217

## Understanding Multiplication and Division Problems: Not a Problem!

(3-5) Gallery Workshop
Solving word problems can be challenging for students. Using a hands-on approach, the speaker will explore and examine the categories of multiplication and division problems. Leave with an in-depth understanding of these structures as you write some problems of your own. Help your students be strong problem solvers!

Sally Kingsley Goss
Howard County Public Schools, Ellicott City, Maryland 11 A (Convention Center)

## 218

## Fraction Sense

## (3-5) Gallery Workshop

Proficiency with fractions is crucial for success in algebra. As teachers, we strive to develop number sense. But how do we develop "fraction sense?" This presentation will focus on instructional strategies that will develop students' fraction sense when implemented daily and intentionally. Classroom structures and activities will be shared.

John SanGiovanni
Howard County Public Schools, Ellicott City, Maryland
Marina F (Marriott)

## 219

## What's Your Problem?

## (3-5, Preservice and In-Service) Gallery Workshop

You can help your students become problem solvers through the use of problem-solving strategies. Experience using, and teaching with, these strategies as well as ideas for instruction and assessing students' work. Receive rich tasks to use with your students. Come prepared to solve some problems!
Linda M. Gojak
John Carroll University, University Heights, Ohio
San Diego Ballroom C (Marriott)

## 220

## Exploring Geometric Shapes as a Visualization of Basic Algebraic Ideas

## (3-8) Gallery Workshop

From early grades, geometry can and should be used to help students visualize and better understand connections between quantities. The activities presented in this gallery workshop may help students practice notions of area and length while preparing them for understanding important algebraic ideas.

## Natalya Vinogradova

Plymouth State University, New Hampshire
Manchester Ballroom A (Hyatt)

## 221

## Visions of Fraction Divisions

## (3-8, Higher Education) Gallery Workshop

Want to see the real picture of fraction division? Algorithms for partitive and measurement fraction division should be "seen" from pictures that promote understanding rather than easily forgotten rote procedures. Hands-on activities will reveal why some fraction problems have exact answers whereas others have whole-number answers with remainders.

## George Douglas Poole

East Tennessee State University, Johnson City
17 A (Convention Center)

## 222

## 3D Paper Mechanisms: Learning Algebra and Geometry through Paper Engineering

## (3-8, Preservice and In-Service) Gallery Workshop

Become a paper engineer! Learn to make your own threedimensional, animated paper mechanisms using cardstock and tape. To understand and design their mechanisms, students measure distances and angles, search for patterns in data, develop their own linear equations, and solve them algebraically, geometrically, or both ways.

## Gary Scott

University of Southern California, Los Angeles
Gary Benenson
City College of New York, New York
Douglas Pavilion A (Hyatt)

## 223

## Computational Thinking and Data Analysis in the Middle School Classroom

## (6-8) Gallery Workshop

Data in the form of numbers, words and images through cell phones, text messages, Internet surfing, and computer gaming fill students' daily lives. Promote understanding of data in a student-relevant context while building thinking skills. Explore activities and strategies to help students analyze data, identify trends and gain meaning from data.

## Lisa Howells

iPlant Collaborative-Tucson, Arizona
14 A (Convention Center)

## 224

## When Your Textbook Isn't Enough:

Teaching Algebra Right the First Time
(6-8) Gallery Workshop
Research indicates teaching procedural skills in algebra before conceptual understanding leaves students with superficial perceptions. Engage students with labs and learning activities that deepen algebraic thinking leading to procedural skills. The "big ideas" developed in this presentation are relational thinking about equality and inverse operations.

Paul Agranoff<br>AIMS Education Foundation, Saint Francis, Minnesota

16 A (Convention Center)

## 225

## Use Multiple Entry-Level Problems to Reach All Students

## (6-8) Gallery Workshop

One way of achieving equity in the mathematics classroom is through the use of multiple entry-level problems. Participants will solve problems, examine students' responses, and receive related resources. They will also discuss the importance of involving all students in the problem-solving process.

## Marilyn Elaine Strutchens

Auburn University, Alabama
5 A (Convention Center)

## 226

## Effective Strategies for Connecting Mathematics and Language for English Learners

## (6-8) Gallery Workshop

Teachers who know the mathematics they teach are better at teaching it to their students. Teachers need to understand how English mathematics language challenges English language learners. This presentation will give teachers insight into the interplay of language, culture, and mathematics understanding.

## Harold Asturias

Lawrence Hall of Science, University of California at Berkeley

Betsy A/B/C (Hyatt)

## 227

Question and Shout: Making Concept Connections through Questioning Strategies
(6-8) Gallery Workshop
Experience a process for strengthening students' mathematics performance on assessments using questioning strategies and language concepts. Participants will expand their questioning process, improve skills in question construction, and learn to self-assess questions so that every student is more successful on various mathematics assessments.

## Jennie Marie Bennett

NUMBERS Mathematics Professional Development, Houston, Texas

## 228

## Engage All Students with Interactive and Visual Environments

(6-8) Gallery Workshop
Students are surrounded by highly visual and interactive environments. Yet math instruction centers on auditory and sequential procedures. Students must be engaged using a more active approach. See how hands-on investigations, informative comics, and videos can be used to engage students and develop essential conceptual math understanding.

Sheldon J. Erickson
Fresno Unified School District, California
Marina D (Marriott)

## 229

## Building the Diagonal Cube

 (6-8) Gallery WorkshopUsing a protractor, the speaker will draw seven adjacent isosceles triangles on strips of colored paper, weave the strips to create the 3-D cube, and observe clockwise observation of each face to discover 24 color combinations, modeling the maximum number of ways to arrange four elements of a set. Instructions and supplies will be provided.

Jane A. Whitmire
Central Washington University, Ellensburg
Salon 5 (Marriott)

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## 230

## Solving Rate Problems with Pattern Blocks

 (6-12) Gallery WorkshopQuestion: "Mary fills 3 balloons per minute. Joe fills 5 balloons every two minutes. How long will it take them to decorate for the prom if they need 440 balloons?" Pattern blocks provide visual models for problems of this type. Experience an intuitive, unique solution path in a hands-on gallery workshop. Classroom-ready resources will be available.
Robb Sinn
North Georgia College and State University, Dahlonega
Dianna Spence
North Georgia College and State University, Dahlonega
Manchester Ballroom G (Hyatt)

## 231 <br> Connections: Linking Research-Based Instructional Strategies with StandardsBased Mathematics

## (6-12) Gallery Workshop

Do you know how to integrate reading, writing, vocabulary, cooperative learning, and diverse learning styles without losing crucial content? Engage in a lesson that uses strategies to support a deep understanding of mathematics. Teachers from a large, urban district are seeing increased engagement and achievement from using these strategies.

## Rosann Hollinger

Milwaukee Public Schools, Wisconsin
Laura Maly
Milwaukee Public Schools, Wisconsin
3 (Convention Center)

## 232

Technology, Assessment, Inquiry: TINspire ${ }^{\text {TM }}$ Navigator and SMART ${ }^{\text {TM }}$ Technology
(6-12) Gallery Workshop
Experience hands-on activities with the latest handheld learning tool. Hear about inquiry learning resources focused on improving instruction of tough-to-teach, tough-to-learn algebra and geometry topics. See how the TI-Nspire Navigator can be used with interactive whiteboards for formative assessment or review and preparation for high-stakes tests.

## Sean Bird

Covenant Christian High School, Indianapolis, Indiana Manchester Ballroom E/F (Hyatt)

## 233

## Looking for Patterns and Developing Algebraic Representations <br> (6-12) Gallery Workshop

Explore hands-on activities designed to help students move from concrete models of problem situations to algebraic representations. Data will be graphed and analyzed using the TI-Nspire.

## Elizabeth Gasque

Retired, Charleston, South Carolina

## Judy Hicks

Retired, Arvada, Colorado
Marina E (Marriott)

## 234

## Building Quadratics and Other Polynomials from Linear Functions

## (9-12) Gallery Workshop

Students do not always see quadratic functions' link with linear functions. The speakers will share activities to develop an understanding of quadratic functions and higher-order polynomials from graphs and tables of linear functions, extending linear contexts to explore relationships among linear, quadratic, and higher-order polynomials.

## Charlene E. Beckmann

Grand Valley State University, Allendale, Michigan

## Denisse R. Thompson

University of South Florida, Tampa
Rheta N. Rubenstein
University of Michigan-Dearborn
8 (Convention Center)

## 235

## Transitioning You and Your Statistics Students to TI-Nspire ${ }^{\text {TM }}$ Handhelds

 (9-12) Gallery WorkshopExplore data analysis and related inference topics in this overview of the extraordinary capabilities of the Nspire. This hands-on gallery workshop will focus on differences between the TI-84 Plus and the TI-Nspire while emphasizing opportunities for maximizing scores on the AP Statistics exam. Activity worksheets will be provided.

## Lee E. Kucera

## 236

## One-Variable and Two-Variable Functions through the Lens of 3-D Geometry in a Dynamic Environment <br> (9-12) Gallery Workshop

Develop a twofold meaning for the concept of a graph of a function involving both algebraic and geometric understandings. Through the dynamic environment of Cabri 3D, visually and graphically give linked meaning to the worlds of algebra, geometry, and calculus.

## Colette Laborde

University of Grenoble, Isère, France
Barbara Pence
San Jose State University, California
Elizabeth Ballroom G (Hyatt)

## 237

## Connecting Calculus with the Roller Coaster

(9-12, Higher Education) Gallery Workshop
A roller coaster is the perfect context for bringing to life and understanding the concepts of calculus. Multiple representations, including the use of GeoGebra, Amusement Park Physics, and Data Studio software, as well as hands-on activities, will provide connections between calculus and roller coasters. It's a ride you can't miss.

## Mike Long

Shippensburg University, Pennsylvania
15 A (Convention Center)

## 238

Exploring Exponential Functions Using the TI-Navigator ${ }^{\text {TM }}$ System

## (9-12, Preservice and In-Service) Gallery Workshop

We'll use calculator features and some simple experiments to model exponential growth and decay and then use the features of TI-Navigator to assess understanding.

## Roberta Koss

Teachers Teaching with Technology ( $\mathrm{T}^{3}$ ), Dallas, Texas
Salon 6 (Marriott)

## 239

## Pick a Concept and Find a Context, or Pick a Context and Find a Concept <br> (General Interest) Session

A major issues for presenting mathematics in context is how this is done. If a context is chosen, does it meet your needs for concepts? If a concept is chosen, can you find a context for that concept? Examples from different grade levels will be discussed. What's your favorite context for a concept?
Johnny W. Lott
Past President, National Council of Teachers of Mathematics; University of Mississippi, Oxford

Elizabeth Ballroom H (Hyatt)

## 240

# Identity and Power in Classrooms: Moving beyond the Achievement Gap 

(General Interest) Research Session
Authors and the editorial panel for the equity special issue of Journal for Research in Mathematics Education will engage participants in discussions about the roles of identity and power (e.g., racism, sexism, ability, classism, language, politics) in mathematics learning and teaching, emphasizing implications for classroom practice.

## Beatriz S. D'Ambrosio

Miami University, Oxford, Ohio
Elizabeth Ballroom D/E (Hyatt)

## LOR 241

## Discovering Grades Pre-K-2 Mathematics

 in the Visual Arts and Children's Literature
## (Pre-K-2) Session

Explore Mondrian's quadrilaterals, Matisse's patterns, Arp's chance collages, Warhol's 2D and 3D shapes, and number sense in works by Pollock and Lichtenstein. Explore children's literature that features the visual arts, and learn how to connect the literature to mathematical concepts. Discuss the research on math-art connections.

Robin Anne Ward
Rice University School Mathematics Project, Houston, Texas
5 B (Convention Center)

242

## Enhancing Think-Pair-Share: Mathematical Communication in Early Childhood Classrooms <br> (Pre-K-2) Session

This session will engage participants in mathematical activities for early childhood students that foster an understanding of number and patterns. Classroom protocols designed to help teachers foster mathematical communication and listening skills in their students will be shared.

## Andrew M. Tyminski

Purdue University, West Lafayette, Indiana

## Signe Kastberg

Indiana University Purdue University Indianapolis
Elizabeth Winarski
Project School, Indianapolis, Indiana
Sue Ellen Richardson
Indiana University Purdue University Indianapolis
7 B (Convention Center)

## 243 <br> Making Math Move and Connect through Centers

(Pre-K-2) Session
Make your math move, connect, and meet individual students' needs through innovative centers. Participants will interactively learn how to set up, move, and assess your students through powerfully connected, hands-on learning centers. Your students will power forward in learning as they move through math centers.

## Lynn Gannon Patterson

Murray State University, Kentucky
Manchester Ballroom D (Hyatt)


## 244

## Geometric Thinking in Young Children: An International Research Perspective <br> (Pre-K-2, Higher Education, Preservice and InService) Session

The presenters will share findings from a study addressing geometric thinking in five- and six-year-olds conducted in Queensland, Australia. Classroom-tested lessons will be shared that connect effective teaching practices to students' learning of important geometric concepts. Implications for teaching and learning will be discussed.

## Trena Wilkerson

Baylor University, Waco, Texas

## Betty Ruth Baker

Baylor University, Waco, Texas
Jordan Sandefur
Baylor University, Waco, Texas
Julie Leary
Baylor University, Waco, Texas
Kimber Fowler
Baylor University, Waco, Texas
Alison Macari
Baylor University, Waco, Texas

## 245

Promoting Deductive Thinking through Problem Solving with Storybook Characters

## (Pre-K-2, Preservice and In-Service) Session

Do you read storybooks and have the characters pose problems that require students to use deductive thinking and problem-solving strategies to solve? This session will share examples of how primary grade teachers used storybooks to promote mathematical reasoning and will provide participants with strategies to use in their own classrooms.

## Jane M. Wilburne

Penn State Harrisburg, Middletown, Pennsylvania

## Jane Keat

Penn State Harrisburg, Middletown, Pennsylvania

LSR 246

## Poetometry: Empower All Students by Connecting Geometry and Poetry <br> (Pre-K-5) Session

Poetometry is an integrated mathematics and poetry project. This session will describe the powerful connections between geometry and poetry. Children learn geometric concepts in the context of poetry. They compose poems, construct figures, and investigate geometric properties. Elementary school students' poetometry will be showcased.

Donna Gee
Angelo State University, San Angelo, Texas
Marilyn Eisenwine
Angelo State University, San Angelo, Texas
Judith A. Hakes
Angelo State University, San Angelo, Texas
11 B (Convention Center)

## 247

## The Mathematics and Literature Connection: Moving beyond The Doorbell Rang

(Pre-K-5) Session
This session will showcase research and practical applications related to the integration of mathematics and children's literature. A framework will be provided that will guide attendees to support students in making authentic and meaningful mathematical connections stemming from children's literature.

Jeffrey Shih
University of Nevada, Las Vegas
Cyndi Giorgis
University of Nevada, Las Vegas
6 C (Convention Center)

## LSR 248

## Drill and Thrill: Mindful Practice That Connects Skill with Understanding

## (Pre-K-5) Session

Whether one is learning soccer, piano, or mathematics, practice is necessary, but mindless practice is deadening. This session will give several concrete examples-with handouts and video-of highly focused, effective practice that children skill with thinking through mindful practice!

## Liz Uccello

Cunniff Elementary School, Watertown, Massachusetts

## Shannon Sauder

Cunniff Elementary School, Watertown, Massachusetts
E. Paul Goldenberg

Education Development Center, Newton, Massachusetts
15 B (Convention Center)

## 249

## A Balanced Approach to Elementary Math Methods: Seeing is Believing

(Pre-K-5, Preservice and In-Service) Session
This presentation focuses on balanced mathematics-an integration of constructivist approaches with a math version of Response to Intervention-in an elementary methods course designed by a teacher, professor, and mathematician. A description of course components will be provided, and attendees will participate in a simulated classroom activity.

## Stephanie Baker Peacock

University of Texas at Austin
Taylor Martin
University of Texas at Austin
Rose Tran
University of Texas at Austin Elementary School
Molly A/B (Hyatt)

## 250

## Individual Assessments: The Key to Student's Skills and Understanding (Pre-K-8) Session

Number and operations is the cornerstone of elementary school math instruction. Teaching students effectively depends on having detailed and specific information about their understanding and skills. While paper and pencil work provides some information about students, individual assessments provide essential in-depth and unique information.

## Marilyn Burns

Math Solutions, Sausalito, California
20 A/B/C (Convention Center)

1762 Norcross Road Erie, PA 16510

## 251

## How to Create Scoring Rubrics: Linking Appropriate Assessment to Math

## (Pre-K-8) Session

Successful teachers set clear expectations for students' work. This session focuses on methods to develop rubrics that facilitate assessment. Attendees will create rubrics, use rubrics to assess sample work, review student-created rubrics, and share experiences. Sample rubrics and resources will be provided.

## Audrey M. Quinlan

Seton Hill University, Greensburg, Pennsylvania
Manchester Ballroom B (Hyatt)

## 252

## Connecting NCTM Articles to the Context of Teaching: Ideas for Growing Professionally

## (Pre-K-8, Preservice and In-Service) Session

The speakers will share favorite articles from Teaching Children Mathematics and Mathematics Teaching in the Middle School and explain how to engage teachers in ways to maximize the connection of the article to our work in classrooms.

## Jennifer Bay-Williams

University of Louisville, Kentucky

## Karen Karp

Board of Directors, National Council of Teachers of Mathematics; University of Louisville, Kentucky

Edward A/B/C/D (Hyatt)

## 253

## Maximizing the Potential of Children's Literature in Teaching Mathematics: What We Can Learn from Teachers

## (3-5) Session

Using children's literature to teach mathematics has long been a recommended practice, but its use often falls short of its potential. Listen to the stories of three teachers who have learned to maximize the potential of this practice. Guidelines and benefits emerge that should help others use children's literature in mathematics more effectively.

## Eula Monroe

Brigham Young University, Provo, Utah

## Damon L. Bahr

Brigham Young University, Provo, Utah
Salon 1/2 (Marriott)

## LCR 254

## Integrating Mathematics and Literature: Enhancing the Potential for Every Child (3-5, Preservice and In-Service) Session

The use of creative ideas to integrate teaching across the curriculum is an important tool. Introducing mathematics units with quality literature creates a positive atmosphere that enables students to be successful and actively involved in mathematical learning.
Sally C. Mayberry
Florida Gulf Coast University, Fort Myers
14 B (Convention Center)

## 255

## Building Strong Algebraic Foundations

(3-5, Preservice and In-Service) Session
This session will address how to build algebraic thinking daily in grades $3-5$. The speaker will model differentiated instruction with a multitude of instructional strategies to create algebraic constants. Come prepared to sing, dance, and think algebra with five powerful activities to use three times a week with students.

## Kimberly Sutton

Creative Mathematics, Arcata, California
6 A (Convention Center)

## LSR 256

## Two Sizes Too Small?

 Geometry Meets the Grinch(3-8) Session
This interactive session will explore size change transformations as we solve the Grinch Heart Task using a combination of by-hand and computer-based methods. This surprisingly rich problem, classroom-ready and student-tested, will reveal misconceptions your students have about proportionality and help you individualize your instruction.
Dana C. Cox
Miami University, Oxford, Ohio
Michael Todd Edwards
Miami University, Oxford, Ohio
10 (Convention Center)

## 257

## Putting a Face on $X$ : Connecting Number Sense to Algebraic Reasoning <br> (3-8) Session

Explore and connect the big ideas of fraction concepts and quantitative reasoning as well as students' common misconceptions about these topics. Using a number-line model and strategies developed to help build quantitative reasoning, participants will examine basic algebra concepts of variable and connect them to reasoning about $x$.

## Nadine Bezuk

San Diego State University, California

## Steve Klass

Encinitas Union School District, Encinitas, California
6 B (Convention Center)

## 258

## Focus on Fractions, Building Fraction

 Sense: Why Not?
## (3-8) Session

Number sense is important for all elementary and middle grade mathematics students. For far too many, number sense has become only a whole-number opportunity. It's way past time to extend number sense to fractions, decimals, ratio, and percent. Check out activities that work and that provide the foundation for developing rational number sense!
Francis (Skip) Fennell
Past President, National Council of Teachers of Mathematics; McDaniel College, Westminster, Maryland

6 F (Convention Center)

## 259

## Fractions Are a Pane in the Window

## (3-8) Session

What topic strikes mortal fear into the hearts of students and parents? Fractions! Come see how to develop meaningful concepts of, and operations with, fractions using a model from students' everyday environment. After this session, windows will take on a new meaning for you. The same will be true for students after they see fractions in windows.

## Dan Dolan

Project to Increase Mastery of Mathematics and Science, Middletown, Connecticut

## 260

## Children's Book Project: Connecting <br> Children's Literature and Mathematics Using Technology

## (3-8, Higher Education) Session

Children's literature is a powerful tool for connecting a child's attention to mathematics. This presentation will introduce a book project appropriate for preservice teachers or for use in a grades $\mathrm{K}-8$ environment. Electronic book versions will be presented, analyzed, and discussed.

## John Francis McAdam

Marist College, Poughkeepsie, New York
Erika Moore
Marist College, Poughkeepsie, New York
Marina G (Marriott)

## 261

## Math Assessment: Engage Students through Projects, Problem Solving, and Writing

## (6-8) Session

Use creative practical math application projects and ex-tended-response problems to engage students in meaningful mathematics. Vocabulary strategies, journaling, and portfolios will be shared. Assessment rubrics and samples of students' work will be included.

Edna F. Bazik
National-Louis University, Chicago, Illinois
2 (Convention Center)

## 262 <br> Engaging Students in Understanding Functions with the Use of a Communicator®

## (6-8) Session

Participants will experience how using the Communicator Clearboard can engage students in understanding the concept of a function and in connecting functions numerically, graphically, verbally, and analytically.

## James R. Rahn

LL Teach, Inc., Bridgewater, New Jersey
San Diego Ballroom B (Marriott)

## LSR 263

## Math + (Science, Social Studies, or Language Arts) = Fun <br> (6-8, Preservice and In-Service) Session

Math has many connections with science, social studies, and language arts. This session will combine a variety of activities, literature, and games to use an interdisciplinary approach to help motivate middle school students. It is designed to help students see that math exists outside the classroom and the textbook.

## Jeanne Ramirez Corpus Mather

University of Science and Arts of Oklahoma, Chickasha
17 B (Convention Center)

## 264

## Conquering Measurement and Scale

(6-8, Preservice and In-Service) Session
Experience activities that make measurement and scale fun to teach and accessible to students. Problems designed to make conversions meaningful, a strategy to teach dimensional analysis, a tool that helps students transition from additive to multiplicative thinking when making scale drawings, and ready-to-use lessons will be included.

## Shelley Kriegler

University of California at Los Angeles Math Content
Program for Teachers and Students

## Joanna Packham

University of California at Los Angeles Math Content Program for Teachers and Students

Manchester 1/2 (Marriott)

## LSR 265

## Connecting to the Real World with Alternative Assessment: It's Not Just Assigning Projects!

(9-12) Session
Alternative assessment is not just assigning projects. Performance assessments, solving real-world problems, or communicating one's understanding is part of the process, but alternative assessment is measuring students' progress with validity and reliability in lieu of paper-and-pencil tests. Learn how without making yourself crazy in the process.

LCR 266

## How to Incorporate Financial Planning Successfully into the Math Classroom (9-12) Session

Financial crisis: in the midst is the mathematics making it possible and solvable. High school students need the math skills to become financially independent. Stop waiting for someone else to teach the financial skills. Participants see portions of lessons and obtain resources to teach lessons on budgeting, investing, and using credit wisely.
Kimberly Hanson Nagorski
Big Lake High School, Minnesota
4 (Convention Center)

## 267

## Financial Algebra: Real-Life Applications All Students Should Know

(9-12) Session
Financial Algebra is an algebra-based, technology-rich program incorporating topics from Algebra 1 and 2, and even precalculus, into the study of taxes, insurance, banking, budgeting, investing, home ownership, auto ownership, credit, and more. The program allows all students to extend and practice their algebra skills.
Robert Kenneth Gerver
North Shore High School, Glen Head, New York

## 6 E (Convention Center)

## 268

## Teaching Limits So Students Will Understand Limits

(9-12) Session
Ways to help your students understand limits and the uses of limits in precalculus and calculus-continuity, asymptotes, area, and the tangent line-will be discussed. Numerical and graphical concepts help the students understand the analytic (delta-epsilon) definition. The use of technology and computer algebra systems will be included.
Lin McMullin
National Math and Science Initiative, Dallas, Texas
Douglas Pavilion D (Hyatt)

Neil D. Cooperman
Millburn High School, New Jersey

## 269

## Using SMART ${ }^{\text {TM }}$ Board to Improve Teaching and Students' Understanding in Mathematics

## (9-12) Session

Learn how to make your math lessons come alive with a SMART Board! The speaker will show how abstract concepts can become accessible to students with SMART's Notebook software. Participants will also learn how to use other math software such as Autograph, The Geometer's Sketchpad and the TI SmartView Calculator with a SMART Board.

## Sarah Jane Heller

Lynnfield High School, Massachusetts
Manchester Ballroom C (Hyatt)

## 270

## Innovative Applications of Computer Algebra Systems (CAS)

(9-12) Session
A CAS environment can make sophisticated mathematics tractable. Computational models of mathematical objects allow students to experiment with mathematical phenomena (functions, graphs, polynomials) in ways that would be difficult to do by hand. Investigate with examples from the CME Project, an NSF-funded high school curriculum.

## Al Cuoco

Education Development Center, Inc., Newton, Massachusetts
Salon 4 (Marriott)

## 271

High School to Higher Education:
Challenges of Transition
(9-12, Higher Education) Session
It is increasingly important for students to continue with education beyond high school-for their future and for the future of our country. We can't wait until students are seniors to inspire them to apply to college and provide support for them to succeed. How can we pave the way for our students to make this crucial transition?

## Susan Hudson Hull

Charles A. Dana Center, University of Texas at Austin
Salon 3 (Marriott)

273

## Engage Students with Real-World Data Analysis <br> (9-12, Higher Education) Session

Arrive with ideas to share for spontaneous data collection, participate in several data-collection activities that wake up even sleepy college students, and leave with data sets and projects that are not only useful in and out of class but also motivate students to practice as they build a historical perspective on data analysis.

## Janet Marie Winter

Pennsylvania State University, Reading
Elizabeth Ballroom C (Hyatt)

## 274

## Mathematics as Sense Making: Technology as a Vehicle

## (9-12, Preservice and In-Service) Session

Dynamic geometry, statistics, and algebraic technologies are tools for engaging students in mathematical thinking and sense-making. This session gives examples of activities that use technological tools for mathematical sense making and makes research-based suggestions for using technologies to deepen students' mathematical understandings.

## M. Kathleen Heid <br> Pennsylvania State University, University Park

Rose Mary Zbiek
Pennsylvania State University, University Park
Manchester Ballroom H (Hyatt)

## 275

## Develop Practioner Inquiry and Professional Learning Communities Using Web 2.0

(Higher Education, Preservice and In-Service) Session
Increase and enhance your understanding of readily available Web 2.0 technologies while exploring the applications in preservice and in-service teacher education. Learn powerful strategies for deepening teachers' knowledge of mathematics while enhancing their understanding of the learning processes of the students they teach.
Hope M. Yursa
Drexel University, Philadelphia, Pennsylvania
Douglas Pavilion B (Hyatt)

## 272

## Beyond the Two-Sample T-Test: ANOVA

## (9-12, Higher Education) Session

This presentation will introduce one-way analysis of variance, including a discussion of hypotheses, conditions, the ANOVA table, the TSST statistic, F-distribution, decision, and concursion. Bring a TI-8X calculator if possible.

## John M. Arko

Glenbrook South High School, Glenview, Illinois

Practice SMART! Assess SMART! Differentiate SMART! Britannica SmartMath!

(Pre-K-5) Exhibitor Workshop

Participants will engage in lively and interactive, Web-based practice and assessment for elementary students. Move students toward computational fluency while using tools that allow teachers to differentiate, assess, track, and evaluate in real time. Students enjoy doing math at home or in the classroom.

## Britannica Digital Learning

Britannica Digital Learning, Chicago, Illinois
1 B (Convention Center)

## ew <br> 277

## Change the Way Students See Math (8-12) Exhibitor Workshop

Prentice Hall Algebra 1, Geometry, Algebra $2^{\circ} 2001$ is changing the way students see math! Make math more meaningful for students by focusing on student engagement, problem solving, visual instruction, and conceptual understanding. Deliver instruction through a blended medium of digital and print components and reach today's digital natives.

## Pearson

Pearson, Upper Saddle River, New Jersey
1 A (Convention Center)

## 3:00 p.m.-4:30 p.m.

## 279

## Can You Explain Your Thinking?

## (Pre-K-2) Gallery Workshop

Participants will learn about cognitively guided instruction (GCI) and implementing it in the classroom. This presentation will explore children's thinking using math word problems and math games. You will learn about the different levels of math word problems using CGI and a variety of fun math games.

## Cynthia Jane Graham

Plano Independent School District, Texas

## Jessica Defrang

Plano Independent School District, Texas
Jane Curry
Baylor University, Waco, Texas
Betsy A/B/C (Hyatt)

## 280

## A Unit Story: Introducing Unit and the Number Line to Young Children <br> (Pre-K-2) Gallery Workshop

See how unit and number are introduced after children are familiar with the meaning of addition and subtraction and comparing quantities. Storytelling and pictures accompanied by activities introduce students to the concept of unit. Participants will use continuous quantities and learn one way in which unit is taught to young children.
Fay Zenigami
Curriculum Research and Development Group, University of Hawaii, Honolulu

## Claire Okazaki

Curriculum Research and Development Group, University of Hawaii, Honolulu

Elizabeth Ballroom G (Hyatt)

## 281

Using Music and Movement to Reach Your Grades K-1 English Language Learners in Math
(Pre-K-2) Gallery Workshop
Come learn some fun songs with movements that will help your students learn to identify numbers and shapes, count to 100 , make patterns, compare sets, and more! These multisensory techniques are particularly effective for children who are still learning English, and they will compliment any existing math program.

## Heidi Butkus

Bonita Unified School District, La Verne, California
Salon 5 (Marriott)

## 282

Camping In, Math Style!

## (Pre-K-5) Gallery Workshop

Are you hiking through the world of mathematics looking for great ideas? Hike to math "trail posts," record ideas in your
camp journal, and fill your backpack with great ideas! Learn
how to replicate a Math Camping In experience for your
classroom or building. Handouts (and s'mores) provided.
Kelli Shrewsberry
Teaching and Learning Collaborative, Columbus, Ohio
Jessica Cahill
South Western City Schools, Grove City, Ohio
Mary Polen
South Western City Schools, Grove City, Ohio
Phyllis Bates
South Western City Schools, Grove City, Ohio

## Jan Wilson

South Western City Schools, Grove City, Ohio
Manchester Ballroom I (Hyatt)

"GET IT"?

## 283

Bridging the Gap between the Standards and Teaching Data Analysis

## (Pre-K-5, Preservice and In-Service) Gallery Workshop

This presentation will engage participants in activities developed by a joint American Statistics Association-NCTM project to enhance statisics teaching in elementary school. One of the activities will compare the use of different data displays (tally charts, frequency tables, bar graphs, and line plots) to examine various aspects of a data set.
Tim Jacobbe
University of Florida, Gainesville
Marina D (Marriott)

## 284

Communicating Mathematical Thinking through Writing,Talk, and Problem Solving (Pre-K-8) Gallery Workshop
This gallery workshop will address practical ways of integrating writing and other types of communication strategies into your mathematics program. Teachers will participate in a variety of fun, easy-to-implement problem-solving activities that encourage students to learn mathematical concepts as well as communciate their own mathematical thinking.

## Cathy Marks Krpan

University of Toronto, Ontario, Canada
San Diego Ballroom A (Marriott)

## 285

What's Rational about Fractions?
(3-5) Gallery Workshop
Explore some activities to help your students connect with fractions and their contexts. Children's literature, manipulatives, and games will be used to supplement students' understanding of fractions. The speaker will also investigate how these activities can be differentiated to accomodate the different learning styles in your classroom.

## Theresa Suetterlein

Fairfax County Public Schools, Springfield, Virginia
Elizabeth Ballroom B (Hyatt)

## 286

## Engaging Activities + Effective

 Instructional Strategies = Students' Success (3-5) Gallery Workshop"Work smarter, not harder" to improve numeric competence. These strategies promote greater participation and sense making, ideal for intervention success and "family math" efforts. A ready-for-immediate handout will include engaging activities to improve students' performance and enhance mathematical reasoning.

## Leigh Childs

California Mathematics Council, San Diego
Elizabeth Ballroom F (Hyatt)

## 287

## Math Out of (Con)text: Bringing Concepts to Life

## (3-5) Gallery Workshop

Go beyond the textbook and teach all students for mathematical understanding. Turn traditional textbook problems into real-life, problem-based tasks that are accessible to all students without increasing your work load or budget. Create lessons for immediate use in the classroom that develop students' math competence, engagement, and understanding!

## Anna M. LaForgia

Council Rock School District, Newtown, Pennsylvania
Julie Eastburn
Council Rock School District, Newtown, Pennsylvania Manchester Ballroom G (Hyatt)

## 288 <br> Number and Spatial Sense Supported by Technology

(3-8) Gallery Workshop
Number sense and spatial sense are the two main components for elementary school education. They can be supported by direct manipulation and dynamic activities. Come discuss how the new Cabri for Elementary Education supports this and can engage students in activities to help them construct more robust and in-depth mathematical concepts.

## Jean-Marie Laborde

Cabrilog, Grenoble, Isère, France
14 A (Convention Center)

## 289

## Using the Sieve of Eratosthenes in Beginning Number Theory Activities (3-8) Gallery Workshop

The sieve reveals an "x-ray" of the decimal system and number patterns. A sieve of the numbers $1-102$ will identify prime numbers by "sifting" out composite numbers whose prime factors are labeled. Activities include patterns in the sieve, factors, multiples, twin primes, fraction families, and patterns in repeating and terminating decimals.

## Diana Venters

Key Curriculum Press, Berkeley, California

## 290

## Putting the Hands in Hands-On Teaching <br> (3-8, Higher Education, Preservice and In-Service) Gallery Workshop

The focus of this presentation is to demonstrate how classroom teachers, at all levels, can enhance their teaching by using a hands-on approach to teaching in order to keep students actively engaged in the lesson. Manipulatives or other materials that allow students to gain a deeper understanding of a given concept will be incorporated.

## Eric J. Heinrich

Louisiana Tech University, Ruston
Julie A. Holmes
Louisiana Tech University, Ruston
15 A (Convention Center)

## 291 <br> Will It Float? Will It Fit? Is It Faultless? <br> (3-8, Preservice and In-Service) Gallery Workshop <br> Attendees will use Unifix cubes to estimate and build rectangular prism; measure, collect data, and use calculators to determine relationships between different circumferences; use water displacement to determine the volume of three dimensional objects; and develop an understanding of density as they determine what will sink or float. <br> Kim Hartweg <br> Keokuk Community School District, Iowa

Salon 6 (Marriott)

## 292

A Project Approach with Kaleidoscopes: Connecting Mathematics, Science, and Art (3-8, Preservice and In-Service) Gallery Workshop
Use the Project Approach to plan and implement a hands-on unit. Build simple mirror systems, a teleidoscope, and a kaleidoscope to take home. Investigate math-science-art integration, kaleidoscope sources, construction materials, resource books, and literature connections. Come if you believe math consists of doing as well as knowing.

## Nick Stupiansky

Edinboro University of Pennsylvania
Sandra Waite-Stupiansky
Edinboro University of Pennsylvania

Douglas Pavilion C (Hyatt)

## 293

## Making Sense of the Census <br> (6-8) Gallery Workshop

The census is about much more than simply counting the number of people in the United States! This year's census will provide math teachers with a plethora of data to use in classrooms. Participants will receive samples of census data and will construct box-and-whisker plots and scatter plots, both by hand and on the TI graphing calculator.

Jennifer M. Seay
Wicomico County Public Schools, Salisbury, Maryland
17 A (Convention Center)

## 294

## Using Math Games to Encourage and Enhance Students' Learning <br> (6-8) Gallery Workshop

H Participants will gain hands-on experience exploring sample games and extensions. They will discuss strategies while reflecting on the mathematical significance of each game. The focus of the gallery workshop will be on number and operations and problem solving as defined in NCTM's Principles and Standards for School Mathematics.

## Sarah Klimek

National Council of Teachers of Mathematics, Reston, Virginia

## Sarah DeLeeuw

National Council of Teachers of Mathematics, Reston, Virginia

Manchester Ballroom E/F (Hyatt)

## 295

Connecting Geometry, Algebra, and Measurement with Geofix
(6-8) Gallery Workshop
Using Geofix shapes allows students to investigate and connect many concepts dealing with two- and three-dimensional geometry. Specific activities related to the NCTM Curriculum Focal Points will be addressed. How can algebra concepts be integrated with geometric concepts?

Don S. Balka
Saint Mary's College, Notre Dame, Indiana
Marina E (Marriott)

## 296

## Not Everything in Life Is Fair: Fair and Unfair Games <br> (6-8) Gallery Workshop

This presentation will investigate games using dice, coins, two-color counters, and other manipulatives to determine whether they are fair or unfair. If the games are unfair, the speakers will explore ways to make them fair.

Betty B. Long<br>Appalachian State University, Boone, North Carolina<br>Deborah Ann Crocker<br>Appalachian State University, Boone, North Carolina

Marina F (Marriott)

## 297

## The Physical to the Cognitive: Building Mathematical Connections <br> (6-8) Gallery Workshop

For algebra and geometry, learn how to build broader and deeper mathematical understanding for your students through the use of manipulatives. You will see how your students will gain crucial insights into the concepts and relationships that make math meaningful and engaging. This gallery workshop will greatly enrich your existing math curriculum.

## Guy Stuart Foresman

Institute for Conceptual Instruction and California Association for the Gifted, Anaheim, California

## Brad Fulton

Mistletoe Elementary School, Redding, California

## San Diego Ballroom C (Marriott)

## 298

## Turning Work Problems into Hands-On Puzzles

## (6-12) Gallery Workshop

Do you want to make work problems hands-on? Are you tired of teaching the trick to solve work problems? These problems are rooted in our everyday lives, but everyday people rarely use the trick to solve them. Join us to learn how to turn work problems into hands-on puzzles to help students create a deep understanding of these interesting problems.

## Barbara Boschmans

Plymouth State University, New Hampshire

## Brian P. Beaudrie

Plymouth State University, New Hampshire
8 (Convention Center)

## 299

## Fibonnaci in Action! Bring the Golden Ratio to Life

(6-12) Gallery Workshop
Learn how to integrate algebra, geometry, art, anatomy, history, and the natural sciences into a meaningful, actionpacked lesson. Through inquiry activities you can introduce one of the most famous sequences that will have your students moving, exploring, and most important, learning.

## Ricci Slobodnik

Northwest Career and Technical Academy, Las Vegas, Nevada

16 A (Convention Center)

300
Exploring the Connection between Recursive Sequences and the Composition of Functions

## (9-12) Gallery Workshop

Multiple representations of recursive sequences will be examined 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.
Thomas Beatini
Glen Rock High School, New Jersey
5 A (Convention Center)

## 301

Connecting Mathematics and Science through Data Analysis
(9-12) Gallery Workshop
Participants will explore the use of graphing calculators and data collectors to simulate real-life problems connecting geometry and algebra to science. Explore using a motion sensor to map the ocean floor and using color to reflect light using a light sensor. All equipment will be provided for the activities. Sample lesson plans will be available.
Judy Johnson
Portsmouth City Schools, Virginia
Douglas Pavilion A (Hyatt)


## 302

## Some Sequentially Organized Thoughts on the Nature of Randomness

(9-12, Higher Education, Preservice and In-Service) Gallery Workshop
Much of mathematics is counterintuitive. Randomness definitely is. Participants will conduct two simulations of random events. Each simulation will be followed by an actual experiment of the simulated event. The simulated results will be compared to those of the actual event, and a discussion will follow.

Richard A. Little
Baldwin-Wallace College, Berea, Ohio
Manchester Ballroom A (Hyatt)

## N N I 302.1

New Teacher Workshop and Kickoff
(Preservice and In-Service) Gallery Workshop
Do you have questions on how to make it all work? Together we have answers and ideas on management, parents, homework, keeping your sanity and more! Join others still in school, just starting their careers, or looking for help. Receive gifts, prizes, and good ideas.

## David Barnes

National Council of Teachers of Mathematics, Reston, Virginia

11 A (Convention Center)

## 303

## Developing Mathematics Learning

 Communities
## (Preservice and In-Service) Gallery Workshop

Mathematics learning communities use students' work to connect professional development to the classroom and to stimulate authentic discussions about how students learn mathematics with the goal of improving both students' and teachers' understanding of mathematics.
Wendy Cleaves
University of Massachusetts Medical School—Regional Science Resource Center, Shrewsbury

## Dona Apple

University of Massachusetts Medical School—Regional Science Resource Center, Shrewsbury

9 (Convention Center)

304

## Weaving Mathematics and Culture through the Internet

## (General Interest) Session

Many Internet sites provide an avenue to weave together culture and mathematics. Explore investigations developed using Internet sites about masks, flags, and games from around the world. The speakers will share how to modify these investigations to meet a range of grade and ability levels.

## Michaele F. Chappell

Middle Tennessee State University, Murfreesboro
Denisse R. Thompson
University of South Florida, Tampa
17 B (Convention Center)

## 305

## Do You Expect Me to Find All the Pebbles in the World? (Hermione Granger)

## (General Interest) Session

How do you know you have found all of the answers? How do you know for sure something does not exist? Questions such as these naturally lead students to create general arguments. In this presentation we will have fun exploring tasks that lead to such questions and in turn general arguments.

## Joanna Rachel Bartlo

Portland State University, Oregon

## Sean Larsen

Portland State University, Oregon
2 (Convention Center)

## 306

## Predictors of Success in Algebra 1 and Higher Mathematics

## (General Interest) Session

What does it take to be successful at Algebra 1, and what is preventing more students from success? Algebra can be for everyone. The results of a year-long, quantitative research study of 1500 high school students in a low-income community will be discussed along with its implications for both curricular and instructional changes.

Linda Faulk<br>Colton High School, California

6 C (Convention Center)

## 307

## Learn $\leftrightarrow$ Reflect Reflection Session

(General Interest) Session
This is a culminating session for those who attended the Learn $\leftrightarrow$ Reflect strand sessions. The session will be a facilitated discussion of four reflection questions.

Professional Development Services Committee
National Council of Teachers of Mathematics, Reston, Virginia

6 D (Convention Center)

## 308

## Yes, Virginia, Good Multiple-Choice Questions Do Exist!

(General Interest) Session
Results from well-written, multiple-choice questions can provide diagnostic information and reveal a student's possible error patterns and misconceptions. The key is to develop meaningful multiple choice questions. This session will give your specific steps and principles on writing good multiplechoice questions and interpreting the results.

## Samantha Burg

MetaMetrics, Inc., Durham, North Carolina
Gregory A/B (Hyatt)

## 309 <br> Building Strong Mathematical Foundations in Prekindergarten

## (Pre-K-2) Session

A learning environment that offers choices, fosters natural language development, and uses appropriate questioning to stimulate and support a child's thinking lays a strong mathematical foundation. This session will focus on building prekindergarten math understanding through natural play situations and providing intentionally organized tasks.

## Kim Bowen

Math Perspectives, Bellingham, Washington
14 B (Convention Center)

## 310 <br> Integrating Algebraic Thinking with Number and Operations

(Pre-K-2) Session
This session will explore how many early elementary school number-and-operation activities can be easily modified to incorporate algebraic thinking and to provide differentiation for students at different levels. Examples will be drawn from a variety of elementary school math curricula, and samples of students' work will be shown.

## Pamela J. Wells

Grand Valley State University, Allendale, Michigan
Elizabeth Ballroom C (Hyatt)

## 311

## Using Literature to Build Operation Concepts and Teach Number Facts

## (Pre-K-2) Session

An understanding of operation concepts occurs best when young children are connected to their learning. Stories help children to build mental pictures of the ideas. These mental pictures then help teach strategies that lead to mastery of number facts. This session will show how stories can teach all four operations beginning in kindergarten.

## Calvin Irons

Queensland University of Technology, Brisbane, Australia
Manchester Ballroom B (Hyatt)

## 312

Generalizations, Connections, and Ideas: Exploring the Role of Algebra in Elementary School
(PreK-5) Session
This session will focus on how algebra ideas are investigated in the elementary school classroom. Algebra concepts in kindergarten through fifth grade will be explored and analyzed through activities and explorations. Emphasis will be placed on generalizations about the operations, growing patterns, fractions, equality, and relational thinking.
Zachary Champagne
Mandarin Oaks Elementary School, Jacksonville, Florida
Douglas Pavillion D (Hyatt)

## 313 <br> Connecting It All: Four Frames Instructional Model

(Pre-K-5) Session
Planned daily instruction includes spiral review, problem solving, direct instruction, and perfect practice. The direct instruction frame will include opportunities to explore number and place value as students develop an understanding of whole-number operations. Games will be shared in the perfect practice frame.

Deborah S. Donovan
Educational Resources Group, Inc., Charleston, South Carolina

Elizabeth Ballroom H (Hyatt)

314

## Developing Primary School Problem Solving <br> (Pre-K-5) Session

Participants will explore developing an understanding of number sense through a conceptual approach to problem solving. Teaching big ideas from the textbook will be discussed, as well as implementing games, the workshop model, authentic problems, and use of the open number line.

Ginalouise Pflanz
Council Rock School District, Richboro, Pennsylvania
Manchester Ballroom C (Hyatt)

## 315

Assessing for Understanding
(3-5) Session
Connect powerful assessment and instructional practices to provide meaningful information for the classroom teacher. This session will share the development of an instructional plan with yearlong assessments that influence classroom practices to enhance and monitor students mathematical understanding in cognitively guided instruction.

U Mary Bridget Sweeney
Des Moines Schools, Iowa
Josie Burg
Downtown School, Des Moines, Iowa
Tracey Donovan
Downtown School, Des Moines, Iowa
Jessica Capper
Downtown School, Des Moines, Iowa
5 B (Convention Center)

## 316

D Strengthen Mathematics Vocabulary Using Popular Games and National Comedy Theater
(3-5) Session
Enhance students' mathematics success by incorporating recommendations from the National Reading Panel. Learn to use activities adapted from TV game shows (new and old), Whose Line is it Anyway?, and the National Comedy Theater. Actors from National Comedy Theater will demonstrate with participants.

Mary C. Cavanagh
Arizona State University, Tempe

## 317

## Braiding Together Language, Thinking, and Mathematics for Students' Conceptual Understanding

## (3-8) Session

Transform your teaching through cognitively-based planning. Students can do problem solving by creating mathematical models, make connections among the mathematical concepts, create their own meaningful representations, and solve problems involving the same concept in different contexts to build a generalized understanding.

## Arthur Hyde

National Louis University, Lisle, Illinois
Susan Friedlander
Northbrook School District 28, Illinois
Marina G (Marriott)

## 318

Digging into Operation Sense: Helping Students Reason with Quantitative Analysis

## (3-8) Session

Do students begin attacking problems through computation without considering what operation they need to be using? Quantitative analysis is a process of analyzing the structure of a problem to verify which operations apply before plugging in values to solve. Come explore a strategy that truly helps think about a math problem before solving it.

## Beth Ann Schefelker

Milwaukee Public Schools, Wisconsin
Connie Laughlin
Milwaukee Public Schools, Wisconsin
Salon 3 (Marriott)

## 319

## Making Math Cool! with "The Rappin' Mathematician"

## (3-8) Session

This session will offer classroom teachers the tools, courage, and expertise to combat negative stereotypes of mathematicians as "nerdy" or "boring." Making Math Cool! will deliver hands-on activities and ideas to turn even the most hardened, tough-to-teach student into one that says, "Hey, that's pretty cool!"

Alex Kajitani
Escondido Union School District, California
20 D (Convention Center)

323

## Learning to Adapt Curricula through Lesson Study

## (6-8) Session

Teachers face important decisions about how to implement curricula in the classroom. Lessons containing unfamiliar content, tools, or methodologies are especially challenging. In Japan, teachers work together through lesson study to implement new ideas. This presentation will examine the decisions teachers must make and how lesson study can help.
Thomas Fenger McDougal
Asia-Pacific Mathematics and Science Education Collaborative, Chicago, Illinois

4 (Convention Center)
6 A (Convention Center)

## 321

## Another Algebraic "Whack on the Side of the Head!"

(3-12) Session
The speaker was once asked how we could connect the concepts of algebraic thinking to the context of the algebra classroom. He will take a humorous, thought-provoking look at some common "mental locks," and we explore how we can turn dry algebraic procedures into powerful algebraic thinking tools.

Larry Campbell
Missouri State University, Springfield
Douglas Pavilion B (Hyatt)

## 322 <br> Empowering Yourself as a Mathematics Mentor

## (3-12, Preservice and In-Service) Session

This session will discuss effective strategies for developing mentoring skills both individually and collaboratively, including a mixture of presentation and interactive experiences to demonstrate skills you can develop to mentor others and improve your own teaching. Examples from different levels of mathematics teaching will be provided.

## Linda Sue Hutchison

University of Wyoming, Laramie
Judith Ellsworth
University of Wyoming, Laramie
Manchester Ballroom H (Hyatt)

## 324

Activities and Applications to Facilitate Middle Grades Mathematics
(6-8) Session
This session will present activities and applications that can be used in middle school classrooms. Activities have been class-tested.

## Rick Billstein

University of Montana, Missoula
Salon 4 (Marriott)

## 325 <br> Creating a Professional Learning Community through Coaching

## (6-8, Preservice and In-Service) Session

Instructional coaching can be a powerful catalyst for developing a professional learning community in mathematics. This session will show how coaching extended beyond individual teachers' classrooms to influence their awareness of inquiry, the selection and alignment of curriculum, and the formation of a vibrant grades 5-8 lesson study team.

## Karma Nelson

Bozeman School District, Montana
Jennifer Luebeck
Montana State University, Bozeman
David Yopp
Montana State University, Bozeman
Elizabeth Burroughs
Montana State University, Bozeman
Manchester Ballroom D (Hyatt)

## 326

## Mathematics's Role in Developing a College-Going Culture <br> (6-12) Session

What role does mathematics education play in developing a college-going culture for at-risk kids? Researchers will share midpoint results of a seven-year, longitudinal study focused on building a college culture. The speakers will discuss merits and challenges of mentoring and tutoring as students make difficult transitions in grades 8 and 9 .

Rich Radcliffe
Texas State University, San Marcos
Beth Bos
Texas State University, San Marcos
Salon 1/2 (Marriott)

Urban Assembly School for Law and Justice, Brooklyn, New York

10 (Convention Center)

## A Checklist for Making Algebra Meaningful and Engaging <br> (6-12) Session

It's a given that many students dislike, and have considerable difficulty in making sense of, algebra. Suggestions and rationale for some changes that build on prior learning experiences and forge connections with all content standards will be offered. Examples, activities, and projects that illustrate and illuminate will be provided.

Margaret J. Kenney
Boston College Mathematics Institute, Chestnut Hill, Massachusetts

San Diego Ballroom B (Marriott)

## 333

## Integrating Advanced Algebra <br> Applications into the Geometry Classroom (9-12) Session

This session will investigate advanced algebra concepts in a geometry environment. Participants will actively explore and extend geometry topics, using a review of the old (advanced algebra) and a preview of the new (precalculus). Included problems will involve probability, maximum and minimum (using a graphing calculator), and series.

## Ilene Hamilton

Retired, Adlai Stevenson High School, Lincolnshire, Ilinois
Elizabeth Ballroom D/E (Hyatt)

## 334

## Connecting with the Past: Lessons Learned from 19th-Century Textbooks

## (9-12, Higher Education) Session

Authors of early U.S. algebra textbooks described teaching philosophies that are surprisingly relevant today. Examining those philosophies gives us a chance to reflect on our own teaching practices. These antiquarian books can be used in the classroom as a teaching strategy. Participants will be able to examine a number of selected textbooks.

## Marcus Jorgensen

Utah Valley University, Orem
11 B (Convention Center)

## 335

## Connecting Mathematical Concepts to Students' Interpretations of Mathematical Representations

## (9-12, Higher Education, Preservice and In-Service) Research Session

Teachers' and students' interpretations of mathematical representations can differ significantly. Students do not always see what mathematicians see in representations. The speakers will investigate students' interpretations of representations and discuss implications for such in respect to learning, instruction, and assessment.

## Kwaku Adu-Gyamfi

East Carolina University, Greenville, North Carolina
Michael J. Bosse
East Carolina University, Greenville, North Carolina

## Ron Preston

East Carolina University, Greenville, North Carolina

## 336

## Some Difficulties to Be Aware of When Using Interactive Geometry in the Classroom

(9-12, Preservice and In-Service) Session
Interactive geometry can be used quite effectively by the teacher to foster mathematical exploration; however, cognitive difficulties may arise in the visual and conceptual analysis of the dynamic figures with which the students can interact. We have analyzed a few of such difficulties and believe it is fundamental to develop awareness of them.

Anna E. Baccaglini-Frank

University of New Hampshire, Durham
Manchester 1/2 (Marriott)

## 337

## Connection-Making in a Secondary Mathematics Methods Course

(9-12, Preservice and In-Service) Session
Why does the test for divisibility by nine work? Why is the volume of a cone one-third the volume of a cylinder? These questions are typically answered using algebra and calculus. The presenters will share alternative explanations using geometry and other representations that led to connectionmaking in a secondary mathematics methods course.

## Bethany Noblitt

Northern Kentucky University, Highland Heights
Laura Bristol
Kentucky Center for Mathematics, Highland Heights
Molly A/B (Hyatt)

## 338

## Portfolios in Mathematics Teacher Education Programs: Tools for Documenting Transformation

(Higher Education, Preservice and In-Service) Session
Portfolios present opportunities for preservice and in-service mathematics teachers to document struggles and transformations in knowledge, pedagogical skills, and dispositions. This session will focus on electronic portfolios rooted in the NCTM Principles and Standards as well as state standards and institutional conceptual frameworks.
William Lacefield
Mercer University, Atlanta, Georgia
7 B (Convention Center)

## 339

## A Study on How Mathematics Teachers Use Technology in Their Teaching: Three Cases

(Higher Education, Preservice and In-Service) Session
To enrich teacher education programs in which teachers prepare teaching for students who live in a technologically advanced society, we need to know the relationship between what teachers learned in their teacher education programs and how they actually teach using technology. Research findings about the relationship will be presented.

## Hyeonmi Lee

University of Georgia, Athens
Edward A/B/C/D (Hyatt)


## The Young Mathematicians at Work Series



In the first three volumes of this popular series Catherine Twomey Fosnot and Maarten Dolk help teachers support children's development in number sense and operation.

The hallmarks of the series include:
D supporting children as they construct mathematical strategies and big ideas

D creating realistic contexts and representational models that develop children's capacity to mathematize their world

D building a collaborative community of mathematical thinkers engaged in inquiry.

Now Catherine teams up with Bill Jacob to offer a comfortably familiar and characteristically rich extension to the earlier work. Catherine and Bill provide a landscape of learning that helps teachers recognize, support, and celebrate their students' capacity to structure their worlds algebraically. They identify for teachers the models, contexts, and landmarks that facilitate algebraic thinking in young students.

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PreK-Grade 2 / 978-0-325-00353-5 / 216pp / \$25.00

## Constructing Multiplication and Division

Grades 3-5 / 978-0-325-00354-2 / 192pp / \$25.00
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## Real Problems Impressive Results


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When children are given the chance to structure number and operation in their own way, they can make sense of algebra not as a funny set of rules that mixes up letters and numbers but as a language for describing the structure and relationships they uncover.
-Catherine Fosnot and Bill Jacobs

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Classroom friendly, grade-band specific volumes are filled with practical, teacher-tested activities and strategies to help students meet and exceed state or local standards.

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NCTM provides a variety of shirts, erasers, pencils, and other gifts and incentives to spread the importance of mathematics.

All conference attendees will receive a special conference discount of $25 \%$ off the NCTM list price on all purchases made in the Bookstore.*
Visit the NCTM Bookstore in the Exhibit Hall. Store hours:
Wednesday 10:00 a.m. - 7:00 p.m.
Thursday 7:00 a.m. - 5:30 p.m.
Friday 7:30 a.m. - 5:30 p.m. Saturday 8:30 a.m.-12:00 p.m.

* Conference discount not valid on sale items.

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N Naw Teacher Strand

EW Exhibitor Workshop

## HIGHLIGHTS

- Iris M. Carl Equity Address (Presentation 478)
- NCTM President-Elect's Address (Presentation 648)
- NCTM Business Meeting (Presentation 582)
- New Teacher Celebration! (Presentation 686)


## Registration Hours

7:00 a.m.-4:00 p.m.

Exhibits and
Cyber Café Hours
8:30 a.m.-5:00 p.m.

Bookstore and Member Showcase Hours
7:30 a.m.-5:30 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 conform to fire codes, it will be necessary to ask persons sitting on the floor or standing to leave the room.

343

## There Is No "Achievement" Gap in Mathematics

## (General Interest) Session

We actually know what schools are doing that are successfully closing the achievement gap: they are focusing on closing instructional gaps by addressing the policies and practices that ultimately produce what we typically label the achievement gap. This session will address these instructional gaps and examine strategies for overcoming them.

## Matt Larson

Lincoln Public Schools, Nebraska
20 A (Convention Center)

## 344



## Improving Achievement and Closing Gaps in Math and Science: Lessons from Schools on the Performance Frontier

## (General Interest) Session

Kati Haycock will tell us about highly effective schools that get unusually strong results in math and science from all students, regardless of race or income. She will discuss the trends and the schools that beat them, as well as national math and science achievement trends, with a special focus on low-income and minority students.
Haycock serves as president of the Education Trust. Established in 1990, the Trust speaks up for what's right for young people, especially those who are poor or members of minority groups. Before coming to the Education Trust, she served as executive vice president of the Children's Defense Fund. A native Californian, she founded the Achievement Council and served as director of the outreach and student affirmative action programs for the University of California system.

## Kati Haycock

The Education Trust, Washington, D.C.
20 B/C (Convention Center)

## 345

## The Mathematical Mysteries of a U.S. \$1 Bill

## (General Interest) Session

Money intrigues and motivates everyone, young and old. Who could have predicted that our common $\$ 1$ bill could have a multitude of arithmetic, geometric, and origami connections for students of all ages? Hear the amazing story behind this rectangle, what it has to do with radar and bowties, and when $\$ 1$ can be worth much more than a dollar!

## David K. Masunaga

Board of Directors, National Council of Teachers of Mathematics; Iolani School, Honolulu, Hawaii

6 B (Convention Center)

## 346

## Renew Yourself by Teaching Math in Another Country

## (General Interest) Session

Whether you are a new teacher, a seasoned veteran, or retired, you have much to offer and learn by teaching in another country. A panel shares their experiences and responds to your ideas and questions about teaching internationally. This session was conceived and cosponsored by the U.S. National Commission on Mathematics Instruction.

## Stuart Moskowitz

Humboldt State University, Arcata, California

## Cathy Seeley

Past President, National Council of Teachers of Mathematics; Charles A. Dana Center, University of Texas at Austin

## Barbara Garii

State University of New York-College of Oswego
Ana Ferreras
Board on International Scientific Organizations, The National Academies, Washington, D.C.

Edward A/B/C/D (Hyatt)

## 347 <br> Math and Opera in the Prekindergarten Classroom

(Pre-K-2) Session
This presentation will explore a collaborative curriculum program that connects mathematical concepts with opera figures from the Commedia dell'Arte and brings them to life in the preschool or prekindergarten setting. Included will be videos of this project, participation in some of the activities, and songs from the curriculum.

## Julie Herron

University of Alabama, Tuscaloosa
Cecile Komara
University of Alabama, Tuscaloosa
15 B (Convention Center)

## 348

## Uno Means One: Grades Pre-K-2 Activities in Number, Measurement, and Spatial Relationships

(Pre-K-2) Session

## TODOS: Mathematics for ALL presentation

During math lessons children learn to respect differences and value variety. Based partly on the speaker's recent experiences in Mexico, the activities reinforce children's understanding of number, measurement, and spatial relationships. Communication and connections help students see that mathematics permeates all cultures and societies.

## Kay Gilliland

Mills College, Oakland, California
16 B (Convention Center)

349

## Games, Grids, Ten Frames: Number Sense for Primary Grades <br> (Pre-K-2) Session

The speaker will explore card games, dice games, and arrays (ten frame and hundreds chart) to build number sense with grades $\mathrm{K}-2$ students. She will use an arithmetic rack (rekenrek) to connect fives and tens to computation.

## Ann Carlyle

Gervirtz School, University of California at Santa Barbara Elizabeth Ballroom D/E (Hyatt)

## 351 <br> This Isn't Language Arts: Vocabulary Instruction in Math Classrooms

## (Pre-K-5) Session

Want to know how to enhance vocabulary instruction in your math classroom? This session will discuss the importance of building mathematical vocabulary in elementary school classrooms as well as how teaching the language of math can be confusing. Various hands-on activities, games, literature, graphic organizers, and writing prompts will be shared.

## Carol A. Corcoran

Stetson University, DeLand, Florida
20 D (Convention Center)

## 350

Math Buddies: A Three-Way Collaboration among Preservice Teachers, Preschoolers, and Their Parents
(Pre-K-2, Preservice and In-Service) Session
The presentation will walk participants through the process of setting up a three-way collaboration. Participants will engage in four model learning activities and review journal comments and interviews with preschoolers, preservice teachers, and parents. The session will conclude with lessons learned and tips for avoiding pitfalls.
Eileen Cyr
Springfield College, Massachusetts

## 352

Math Fact Fluency: How Can Students' Data Guide Its Development?
(Pre-K-5) Session
How does a student's math fact fluency develop over time? Which methods can be used to promote fluency across a broad range of students? See what the latest research reveals about math fact fluency through longitudinal performance data from a large-sample, online research platform developed under grants from the National Science Foundation.
Paul Cholmsky
ExploreLearning, Charlottesville, Virginia
Salon 4 (Marriott)

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\begin{aligned}
& \text { Now Students Can } \\
& \text { Envision Geometry... }
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353

## A Comprehensive Approach to Number Sense: Technology That Supports Professional Development

## (Pre-K-5) Session

Explore how Dr. Bob Wright's Learning Framework in Number, from Math Recovery and Add+Vantage Math Recovery, is used to improve achievement by providing a foundational and comprehensive understanding of number sense development and how technology can be used to help classroom teachers expand instructional approaches with this concept.

## Tina Silvestri

Solon City Schools, Ohio
William LaRiccia
Solon City Schools, Ohio
6 C (Convention Center)

## 354

## Learning about Mathematics in Conversation with Children

(Pre-K-5, Preservice and In-Service) Session
What do teachers learn when children in first, second, and fourth grade are invited into a conversation about their mathematical thinking? Explore how conversations in mathematics assessment provide opportunities for children to illustrate their deep mathematical thinking and for teachers to develop different perspectives of mathematical ideas.

Florence Glanfield
University of Alberta, Edmonton, Canada
M. Shaun Murphy

University of Saskatchewan, Saskatoon, Canada
Gladys Sterenberg
University of Alberta, Edmonton, Canada
Douglas Pavilion B (Hyatt)

## 355

Intervention, the Ultimate Connector: Integrating Concepts, Content, Contexts and Cultures

## (Pre-K-8) Session

At some time, everyone needs intervention. This session will engage participants in fun activities, a variety of representations (concrete/visual/virtual), and active discussions to link concepts, content, context, and culture, thereby ensuring fairness and accessibility for all students, including the disenfranchised.

Carolyn M. Moore
McGraw-Hill, Columbus, Ohio
Manchester 1/2 (Marriott)

356

## Improving Blackboard Organization to Enhance Students' Mathematical Thinking and Understanding

## (Pre-K-8) Session

Japanese teachers believe that effective use and organization of the blackboard, or bansho, helps improve students' mathematical thinking and understanding. For this reason, bansho is often examined during lesson study in Japan. Participants will learn ideas for enriching students' learning through effective use of the blackboard.

## Makoto Yoshida

William Paterson University, Wayne, New Jersey
William Jackson
Scarsdale Public Schools, New York
Manchester Ballroom H (Hyatt)

## 357

Scratch ${ }^{\text {TM }}$ Brings Geometry to Life! (3-5) Session
Animation brings geometry, integers, and Cartesian planes to life. Scratch, a new programming language, was integrated into our curriculum. Projects and resources will be shared. Scratch supplements the Focal Points by extending the understanding of 2D shapes, transformations, and rotational symmetry. Scratch was developed at Massachusetts Institute of Technology and is free.

## Mary Queitzsch Zocchi

Watkins Elementary School, Washington, D.C.

## Ann Potter

Langley School, McLean, Virginia
2 (Convention Center)

## 358

Multiplication Matters
(3-5) Session
Teaching and learning multiplication facts can be a trying process. On the basis of her dissertation research, the speaker has come up with a radically different approach to teaching multiplication facts that helps teachers and makes the process engaging for children. She will share her plan.

[^2]Elizabeth Ballroom H (Hyatt)

362

## How Can We Improve Students' Success with Algebra? <br> (3-12) Session

Why do many "successful" elementary school math students have so much difficulty with formal algebra? How do we diagnose common misconceptions and partial concepts that children may have developed regarding number and operations? Reveal "cracks" in our students' foundations that may be keeping them from engaging deeply in their algebraic studies.

Debi De Paul
Educational Service District 123, Pasco, Washington
5 B (Convention Center)

## 363

Helping Struggling Learners Increase Self-Monitoring through Writing to Solve Problems

## (3-12) Session

Many students with disabilities are poor self-regulators when solving word problems. This often hinders their progress and development in solving problems and understanding the content. Teachers will be provided with an instructional approach that uses writing to promote self-monitoring and strategic awareness for solving problems.

Delinda van Garderen
University of Missouri-Columbia
Douglas Pavilion D (Hyatt)

## 364

## Inquiry into Equity: Using a Mathematics Cultural Proficiency Continuum (3-12) Session

Develop your school or district capacity for closing mathematics education opportunity and achievement gaps, using a new inquiry-based tool to identify and examine your instructional program's cultural proficiency. Learn how a leadership team of teachers are using this tool to close gaps for African American and English language learner students.

## Lisa Usher-Staats

Los Angeles County Office of Education, Downey, California
Stephanie Graham
Los Angeles County Office of Education, Downey, California
7 B (Convention Center)

John F. Thomson
Consultant, Rochester, New York

365

## Learning Geometry from a Sheet of Paper

 (6-8) SessionMiddle school geometry will be taught by using an inexpensive manipulative-paper! Through paper-folding activities, using both regular paper and patty paper, many of the middle school geometry topics, and much of the vocabulary, will be shown. Come learn some new ways to teach geometry to your students.

## Catherine Banks

Texas Woman's University, Denton
Edith Hays
Texas Woman's University, Denton
Marina G (Marriott)

## 366

## Teaching Math to Artists: Creative Math Projects in High School

(6-12) Session
Math teachers at the Boston Arts Academy have developed a unique math program that infuses arts and project-based learning into a traditional math sequence. Come hear about some of our successes. Leave with project samples that will engage students, connect to their interest in the arts and allow students to explore rich math content.

## Mark Lonergan

Boston Arts Academy, Massachusetts
11 B (Convention Center)

## 367

## Linking Mental Math, Concepts, and

 Context in Grades 7-12 Mathematics (6-12) SessionWith the use (and sometimes overuse) of calculators, we need to put a focus on mental math. This session will discuss ways to teach mental-math strategies, help students see the power of mental math, and show ways we can have students simultaneously practice mental-math strategies and the concepts and skills we are teaching.

## James Olsen

Western Illinois University, Macomb
4 (Convention Center)

368


## Reasoning and Sense Making in Geometry: Even Italian Painters Sometimes Get It Wrong <br> (6-12) Session

Geometry can be a difficult subject: it is often the first time a student is asked to think visually or logically. The speaker will explore geometry areas that give students trouble and look at classroom-tested ideas that help facilitate students' learning. Students' work will be used to highlight reasoning and sense making.
Paul Kelley is a mathematics teacher at Anoka High School, Minnesota, where he has taught since 1987, focusing on teaching geometry and teaching using technology. He has written curriculum for his district for geometry, statistics, and trigonometry and served on several adoption committees. He cowrote Navigating through Geometry in Grades 9-12 and has presented at many mathematics conferences.

## Paul Kelley

Anoka High School, Minnesota
6 A (Convention Center)

## 369

## Interactive Statistics: Exploring Statistical Concepts through Real-World Context

 (6-12) SessionParticipants will explore real-world statistical concepts in context of the GAISE Pre-K-12 Report (www.amstat. org/education/gaise) by formulating questions, collecting, analyzing, and drawing conclusions from data. This session will enhance educators' understanding of statistics, clear up common misconceptions, and provide interactive activities.

## Martha Aliaga

American Statistical Association, Alexandria, Virginia
Rebecca Nichols
American Statistical Association, Alexandria, Virginia
Gregory A/B (Hyatt)

## 370

## What Do Mathematicians Do, Anyway? Explorations in Problem Solving

## (6-12, Higher Education) Session

Many students equate excellence in math with speed in problem solving and are unaware that mathematicians may spend years on a single problem. Learn about a method to encourage students to investigate a single problem at length and to communicate mathematical thinking. Receive detailed directions, a scoring rubric, and sources of problems.

## Mary Pat Sjostrom

Chaminade University of Honolulu, Hawaii
10 (Convention Center)

## 371

Create More Instructional Time: Effectively Integrating SMART ${ }^{\text {TM }}$ Boards, TI-Nspire ${ }^{\text {TM, }}$ and TI-Navigator ${ }^{\text {TM }}$

(6-12, Higher Education) Session

Buy time for your classroom by incorporating these fascinating technologies! Place your actual daily class notes online in color as PDFs and videos. Use Nspire documents as investigations, reviews, tutorials, study cards, and more. Learn to use the wireless Navigator system effectively. Obtain a CD with hundreds of ready-to-use activities.

## Tom Reardon

Fitch High School, Youngstown, Ohio
Elizabeth Ballroom A (Hyatt)

## 372

## Infusing Technology into Math Education for Latino and At-Risk Students

## (6-12, Higher Education) Session

This session will report on five years of Title V and what technology worked best for Latino and at-risk students. These emerging learning technologies should be used to supplement mathematics education for today's media-hungry, twenty-first-century student.

## Richard Gardner

Alliant International University, San Diego, California 6 E (Convention Center)

## 373

## Linking Best Mentoring Practices and Online Support for Beginning Teachers

(6-12, Higher Education, Preservice and In-Service) Session

A mentor or cooperating teacher plays a crucial role in beginning or student teachers' development. Strategies will be discussed for guiding them to effective mathematics teaching and dealing with their classroom challenges. The effectiveness of a new approach using on-line support for discussion and reflection will be presented.

Nina R. Girard
University of Pittsburgh at Johnstown
Manchester Ballroom D (Hyatt)

## 374 <br> Using Interesting Problems to Link Concepts to Context

## (6-12, Preservice and In-Service) Session

Interesting problems from many aspects of real life and from mathematics itself will be connected to concepts in the middle school curriculum. Problems will be solved with audience participation and discussion of how they can be used in a packed program.

## Jack Price

Past President, National Council of Teachers of Mathematics, Newport Beach, California

Manchester Ballroom B (Hyatt)

## 375 <br> Exploring Exponentials and Logarithms in an AP Calculus Class

(9-12) Session
Students need a deep understanding of functions in order to derive their integrals and derivatives. Too often students memorize formulas with little understanding of what the formulas mean. Come explore the calculus of functions and their inverses visually, numerically, algebraically, and verbally using technology and cooperative learning.
Lyn Orletsky
Titusville High School, Florida
Molly A/B (Hyatt)



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## 376

## Probing Understanding: What Can We Learn from Students' Responses in LargeScale Assessments?

## (9-12) Session

The speakers will examine geometry problems from assessment instruments used in a longitudinal study. They will share students' work and look at the strategies students used Specifically, what strategies are successful students using? What are common misconceptions? What are the implications for geometry teaching?

## Oscar Chavez

University of Missouri-Columbia
Dan James Ross
University of Missouri-Columbia
San Diego Ballroom B (Marriott)

## 377

## Board Games, Markov Chains, and Matrices

## (9-12, Higher Education) Session

What's the average length of a game of Chutes and Ladders? This question and others can be answered using Markov chains, a branch of probability closely tied to linear algebra. Participants will explore Markov chains using materials from an NSF-funded curriculum currently in development. Sample materials will be provided.

## Bowen Kerins

Education Development Center, Inc., Newton, Massachusetts
Salon 3 (Marriott)

## 378

## Energy-the Sixth E: Enhancing the Five-E Model with Whistles and Bells

## (9-12, Higher Education) Session

This session will discuss the implementation of, and results from, having teachers working as a finely tuned, collaborating, dream-team machine. It will include how to integrate the "Five E" model with SMART board technology, TI-Nspire calculators, thinking maps, white boards, and different handson activities.

## Naomi Christine Molina de Wood

Cesar Chavez High School, Houston, Texas
Juanita Ramos
Cesar Chavez High School, Houston, Texas
Christie Ginson
Cesar Chavez High School, Houston, Texas
Manchester Ballroom C (Hyatt)

379

# Authentic Discovery Learning Projects in Statistics <br> (9-12, Higher Education) Research Session <br> The speakers share results from a project funded by the National Science Foundation, including classroom-ready materials developed for using discovery learning projects in statistics, classroom implementation of these projects, and quantitative analysis of the success of these materials based on students' attitudes and content knowledge. 

Dianna Spence
North Georgia College and State University, Dahlonega
Robb Sinn
North Georgia College and State University, Dahlonega
17 B (Convention Center)

## 380 <br> Developing Mathematical Thinking: Professional Development (PD) for Helping Teachers Meet the Needs of Diverse Learners <br> (Preservice and In-Service) Session <br> An overview of a PD model that increased achievement at elementary and middle school levels will be presented. PD facilitators and teachers from schools with high populations of English-language-learner and low-socioeconomic-status students will discuss their challenges and successes and how the program influenced their teaching. <br> Kimberly Bunning <br> Boise State University, Idaho <br> Sam Strother <br> Boise State University, Idaho <br> Gay Lynn Erb <br> Meridian School District, Idaho <br> Melissa Langan <br> Caldwell School District, Idaho

Elizabeth Ballroom C (Hyatt)

## 8:30 a.m.-9:30 a.m.

## CW 381

## Interactive Digital Texts Engage Students in Algebra

(General Interest) Exhibitor Workshop
Use multiple forms of input to engage your students in algebra. Animations, audio, multiple self-assessment tools and more are built into a comprehensive digital text which has successfully completed the California state adoption.

## Kinetic Books

Kinetic Books, Seattle, Washington
1 B (Convention Center)

## EW 381.1

## Moving with Math: Assessment and Hands-On Lessons to Differentiate Instruction for Response to Intervention (Rt)! <br> (General Interest) Exhibitor Workshop

Moving with Math ${ }^{\circledR}$ is the RtI Solution that will reach preKhigh school students in all tiers with proven results! Attendees will participate in hands-on activities and learn what makes Moving with Math the intervention leader.

## Math Teachers Press

Math Teachers Press, Minneapolis, Minnesota
Torrey (Marriott)

## eW 381.2

## Writing in Mathematics

## (General Interest) Exhibitor Workshop

How do you incorporate writing into the mathematics classroom? Math for America (MfA) master teachers highlight how communicating about math strengthens students' learning and acts as an assessment tool. The presentation will explore the role of writing in math education, review real classroom scenarios and demonstrate learning logs and project-based writing.

## Robert LaColla

Math for America, New York, New York
Jesseca Long
Math for America, New York, New York
Columbia (Marriott)

## CW 382

Improving Student Success Through Better Engagement: MathXL® for School (6-12) Exhibitor Workshop
MathXL® for School allows teachers to focus on important aspects of teaching, such as measuring learning outcomes and identifying students who need help, while students receive a customized learning experience with automatic grading, immediate feedback, multiple help resources, and practice, practice, practice!

## Pearson

Pearson, Upper Saddle River, New Jersey
1 A (Convention Center)

> Visit www.nctm.org for lessons, activities, and teacher resources!

## 383

## Link Up with Geometry Activities <br> throughout the Seasons <br> (Pre-K-2) Gallery Workshop

Developing geometric concepts requires on-going learning activities to provide a solid foundation. Participants will create pattern-block animals, symmetrical rocks, and three-dimensional alphabet blocks. Link up with geometry activities that keep building geometry concepts throughout the year.

## Charlene Steadman

North Kansas City Public Schools, Missouri
Elise Sabaski
North Kansas City Public Schools, Missouri
14 A (Convention Center)

## 384

Mudpies, and Magnets, and Math, Oh My! (Pre-K-2) Gallery Workshop
Follow the Yellow Brick Road to math and science integration. Participants will experience hands-on, Standards-based activities that facilitate the development of math and science concepts. Activities presented will highlight areas such as measurement, data analysis, classification, and more.

## Latrenda Knighten

Consultant, Baton Rouge, Louisiana
Betsy A/B/C (Hyatt)

## 385

## Effective Uses for Ten Frames

## (Pre-K-2) Gallery Workshop

Ten frames are an effective tool to use to support the development of number sense. Mathematical routines, games, and problem-solving lessons using the ten frames will engage participants. Research complimenting the use of ten frames will be shared.
Melissa Conklin
Math Solutions, Sausalito, California
Salon 6 (Marriott)

## 386

## Place Value: The Foundation for All Mathematics Begins in Primary School (Pre-K-5) Gallery Workshop

Place value: what is it? Why is it important? How do you teach it and teach it well in kindergarten through third grade? Work on the development of place value through adding and subtracting whole numbers. See how place value is the foundation of future algebraic success for your students. You will really understand the value of place value!
Lori M. Hamada
Fresno County Office of Education, California
5 A (Convention Center)

## 

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- National Math Panel


## The Case for Fraction Nation

- Research-based
fraction instruction
- Adaptive Technology
to meet each student's needs
- Teacher Support
to build capacity and expertise


# 387 <br> <br> Round Up Those Computational Skills <br> <br> Round Up Those Computational Skills <br> (Pre-K-5) Gallery Workshop 

Experience hands-on ways to unlock the number-algebra sense door for students with fun, engaging activities. The activities help students make connections between concepts and operations through the investigation of whole number operations, the discovery of patterns, and the value of estimation. All materials will be available electronically.

Mary Alice Hatchett
Texas Council of Teachers of Mathematics, Austin
Manchester Ballroom G (Hyatt)

## 388

Creating a Mathematical Community through Management and Motivation

## (Pre-K-5, Preservice and In-Service) Gallery Workshop

The mathematical learning that takes place in your classroom is only as rich as the community that has been created. Learn how to build a classroom environment that fosters mathematical understanding by using engaging activities that invite students' participation and support a range of learners.

## Kimberley Englert

Jefferson County Public Schools, Louisville, Kentucky
Elizabeth Todd Brown
University of Louisville, Kentucky
Jennifer Bay-Williams
University of Louisville, Kentucky
Ronnah Bogert
Jefferson County Public Schools, Louisville, Kentucky
3 (Convention Center)

## 389

## Smarter Together! Rigorous Mathematics

 for All Students through Complex Instruction
## (Pre-K-8) Gallery Workshop

As classrooms become more diverse, teachers must find ways to support all students in learning rigorous mathematics; however, perceptions about academic ability can limit students' participation. The speakers will draw on the framework of complex instruction for tools for improving mathematical learning by addressing inequitable participation.

Marcy B. Wood<br>University of Arizona, Tucson<br>Ginney Stokes<br>Lansing School District, Michigan<br>Lisa Jilk<br>University of Washington, Seattle

Manchester Ballroom I (Hyatt)

390

## Making Mathematical Sense: Engage Your Students with Attribute Pieces

## (3-5) Gallery Workshop

Together we will explore counting, categorizing, and reasoning activities that will enable children to make important logical connections about the pieces. Come prepared to think with your hands. You will leave with a collection of new activities to help your students see more patterns and to answer some "why" questions.
Mary J. DeYoung
Hope College, Holland, Michigan
17 A (Convention Center)

## 391

## What's the Point? How to Teach Decimals in Real-World Context

## (3-5) Gallery Workshop

Do your students need to develop their decimal number sense further? This presentation will show teachers how to link decimals to fractions, percent, money, and the metric system. Participants will leave the session with ideas and activities that will engage their students with decimal concepts in a real-world context.

## Connie Conroy

Howard County Public Schools, Columbia, Maryland
Heather Romich
Howard County Public Schools, Columbia, Maryland
Elizabeth Ballroom G (Hyatt)

## 392

## It's a Tangram World

(3-5, Preservice and In-Service) Gallery Workshop
This seven-piece puzzle provides mathematical experiences including properties of geometric shapes, angle measurement, liquid measurement, geography, fractions, decimals, percent, and musical notation. Learn how to fold and cut a puzzle from a $4 \times 6$ inch card, play games, solve puzzles, and strengthen math concepts with this amazing material.

Peggy McLean
Nueva School, Hillsborough, California
Salon 5 (Marriott)

## 393

## Benjamin Banneker: Reaching All Students-Observe Success in Action <br> (3-8) Gallery Workshop <br> Benjamin Banneker Association presentation

Actions speak louder than words. See for yourself a typical class of elementary school students being taught high-level mathematics using Project SEED's successful Socratic pedagogy. Observe proven strategies for increasing feedback, focus, and conceptual understanding that raise achievement and prepare students for success in algebra and beyond.

## William Glee

Project SEED, Berkeley, California
Hamid Ebrahimi
Project SEED, Berkeley, California
11 A (Convention Center)

## 394

## Connecting Contexts to Concepts Using Fraction Division

## (3-8) Gallery Workshop

Using multiple representations and strategies to connect context with the concept of fraction division, the speakers will explore several advanced models for thinking about fraction division. Participants will discover methods of dividing with fractions that are most helpful to students, and they will leave with ideas for classroom implementation.

## Steve Klass

Encinitas Union School District, Encinitas, California
Nadine Bezuk
San Diego State University, California
8 (Convention Center)

## 395

## Spirals, Knots, Tessellations, Puzzles: Challenging and Engaging Geometry and Art Projects

## (3-8, Preservice and In-Service) Gallery Workshop

Tessellate a circle with remarkable congruent shapes. Make a spiral of nesting squares. Design an ancient knot. Make a chambered nautilus of similar triangles. Cut a hexagon into congruent pentagons. These hands-on projects combine geometry with art and beautiful artifacts. Tested lesson plans from a geometry course for teachers will be included.

## Patricia Baggett

New Mexico State University, Las Cruces
Andrzej Ehrenfeucht
University of Colorado, Boulder
Manchester Ballroom A (Hyatt)

## 396

## From Skip Counting to Linearity: How Do We Get There?

## (3-12) Gallery Workshop

In this presentation the journey from skip counting to linearity will be explored through the mathematical idea of recursion. Algebraic thinking throughout the grades provides the connections necessary for a deep understanding of mathematics. Participants will experience hands-on activities that make this transition accessible for all students.

## Mary Mooney

Milwaukee Public Schools, Wisconsin
Astrid Fossum
Milwaukee Public Schools, Wisconsin

> San Diego Ballroom A (Marriott)

## 397 <br> Everyone Wins, When Everyone Plays! (6-8) Gallery Workshop

Games provide an enjoyable, effective, and interactive way for students to practice and master skills by helping students develop the ability to think critically, solve problems, and investigate ideas about probability. You will learn games that can be played the next day in class.

## Rochelle Fouts

McGraw Hill, Chicago, Illinois
Marina D (Marriott)
-N解 398

## Math Tasks and Processes That Work for Middle Grades Students

(6-8, Preservice and In-Service) Gallery Workshop
Classroom management and learning in a classroom can be helped significantly by building good tasks and good processes. Find out what makes a good task, how to develop and use them in your class, and what processes support more learning and less trouble.

## Jenny Simmons

Saltillo High School, Tupelo, Mississippi
Barbara Dougherty
Board of Directors, National Council of Teachers of Mathematics; Iowa State University, Ames

9 (Convention Center)

## 399 <br> Buses Aren't That Small! Using Hot Wheels ${ }^{\circledR}$ to Examine Scale Factor (6-12) Gallery Workshop

This presentation will share an activity published in Mathematics Teaching in the Middle School that uses Hot Wheels cars to examine the concept of scale factor and that can be connected to the concepts of similarity and proportionality. Students' thinking and extensions to other real-world applications will also be addressed.

Matthew S. Winsor
Illinois State University, Normal
Elizabeth Ballroom B (Hyatt)

## 400

## F Connecting Algebra and Geometry: Activities to Promote Achievement for All

 Students(6-12) Gallery Workshop
Participants will engage in a variety of classroom-ready activities designed to connect algebraic concepts to geometric concepts and representations. Activities will span introductory algebra, second-year algebra, and precalculus.
John A. Carter
Adlai E. Stevenson High School, Lincolnshire, Illinois
Gwen Zimmermann
Adlai E. Stevenson High School, Lincolnshire, Illinois
Darshan Jain
Adlai E. Stevenson High School, Lincolnshire, Illinois
Douglas Pavilion A (Hyatt)

## 401

## Using Literacy Strategies to Increase Mathematical Understanding

## (6-12) Gallery Workshop

Mathematics textbooks can contain more concepts per line, sentence, and paragraph than any other kind of textbook. This brings increased challenges for students. This presentation will incorporate literacy strategies that promote mathematical understanding, guide instruction, and engage students in powerful learning experiences.

## Kathleen Dempsey

Mid-continent Research for Education and Learning, Denver, Colorado

Elizabeth Ballroom F (Hyatt)

## 402

## You Can Do It! Technology Can Help! <br> (6-12) Gallery Workshop

Challenge students to make connections among mathematics, science, and technology using real-world phenomena. Use the TI-Nspire handheld technology, in conjunction with probes and other manipulatives, to explore linear, exponential, and quadratic functions.

## Kathleen McKinley

School District of Lancaster, Pennsylvania
Alwina F. Green
School District of Philadelphia, Pennsylvania
Marina E (Marriott)

## 403

## Strategies for Teaching Probability in the Middle Grades

(6-12, Higher Education) Gallery Workshop
This gallery workshop will begin with probability experiments to generate data for experimental probability. Three strategies for computing theoretical data for these experiments-sample spaces, probability trees, and an area model-will be covered, with comparisons made between the experimental and theoretical probability.

## Sue Sundberg

University of Central Missouri, Warrensburg
15 A (Convention Center)

## 404

## Students' Work: What's the Big Idea?

(6-12, Preservice and In-Service) Gallery Workshop
How is this student's thinking developing? What is the core mathematical concept at stake? How can I respond in a way that engages and moves thinking forward while eliciting more information? Look at the insights gained from teams of researchers, mathematicians, and teachers looking at the work of students mentored in online problem solving.

## Stephen Weimar

The Math Forum @ Drexel, Philadelphia, Pennsylvania
Marina F (Marriott)

## 405

## Discrete Mathematics: Classroom-Ready Tasks for Cryptography, Graphs, Recursion, and More

(9-12) Gallery Workshop
Discrete math is engaging, powerful, and fun. It "should be an integral part of the school mathematics curriculum" (NCTM 2000). Come sample a collection of classroom-ready tasks that will make your class come alive with problem solving, reasoning, sense-making, connections, and contemporary contexts.

## Eric Hart

Maharishi University of Management, Fairfield, Iowa
San Diego Ballroom C (Marriott)

## 406

## Deal or No Deal: Fair or Not Fair?

(9-12, Higher Education) Gallery Workshop
Participants will engage in an interactive presentation where they will calculate mathematical measures of mean, median, expectation, and fairness in order to analyze the offers from the "banker" in the game show Deal or No Deal and predict offers as the game progresses until the final deal is accepted.
Jason Gershman
Nova Southeastern University, Fort Lauderdale, Florida 16 A (Convention Center)

## 407

## Multiple Representations of Calculus Concepts Using TI-Nspire ${ }^{\text {TM }}$ CAS Technology

## (9-12, Higher Education) Gallery Workshop

Participants will be given hands-on experience using the handheld TI-Nspire computer algebra system (CAS). They will work on activities that represent calculus concepts algebraically, graphically, and numerically.

## Patricia Sauquillo Brooks

Mount Carmel High School, San Diego, California
Manchester Ballroom E/F (Hyatt)

## 408

## Under the Tip of the Iceberg: A Model for Assessment and Instruction

## (Higher Education, Preservice and In-Service) Gallery Workshop

This interactive presentation will highlight assessment activities and teacher-designed materials used in professional development with elementary, middle, and high school math teachers. Participants will explore and discuss how an iceberg model can be used to support teachers' classroom assessment practices and deeper understanding of mathematics.

## David C. Webb

University of Colorado at Boulder
Douglas Pavilion C (Hyatt)

409

## Using Mathematics Homework with an Eye on Equity and on Mathematical Integrity (General Interest) Session

Homework is widely used in mathematics teaching, but it can also amplify inequities. How can homework be designed and used in ways that support mathematical development and that are sensitive to the differences in students' out-of-school contexts and responsibilities? The session will examine specific examples of homework and their design and use.

## Deborah Loewenberg Ball

University of Michigan-School of Education, Ann Arbor
20 A (Convention Center)


Worksheets Don't Grow Dendrites: Twenty Instructional Strategies That Engage the Brain
(General Interest) Session
If students don't learn the way we teach them, then we must teach them the way they learn. Experience 20 brain-compatible strategies that maximize understanding and memory. Explore research that shows why these strategies are preferable to others and ensure that brains retain important concepts, not only for tests, but for life!
Marcia Tate is a former executive director of professional development for the DeKalb County Schools, Decatur, Georgia. In her 30-year career with the district, she has been a classroom teacher, reading specialist, language arts coordinator, and staff development director. She has worked with administrators, teachers, parents, and business and community leaders and has authored five best-selling books.
Marcia L. Tate
Developing Minds, Inc., Conyers, Georgia
20 D (Convention Center)

## 411

## Bridge across the Americas: Connections for Strengthening Math Education in Latin America

## (General Interest) Session

This session will be an overview of past linkages between professional organizations in the United States and Latin America with proposals for how they can be evaluated and improved, in order to understand the impact of both systems on immigrant students.

## Rick Scott

New Mexico Department of Higher Education, Santa Fe

## Eduardo Mancera

Asociación Nacional de Profesóres de Matemáticas, Mexico City, Distrito Federal, Mexico
Eliana Rojas
University of Connecticut, Storrs

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## 412

## From Fingers to Figures

## (Pre-K-2) Session

The speaker will show how math history helps students develop their mathematical understanding of place value and number sense. She will demonstrate the development of counting and share the stories and materials. Mathematical concepts will be more evident and easily understood if students are given a historical background.

## Doris Lindberg

Carlssons Skola, Stockholm, Sweden
5 B (Convention Center)

## 413

## Teaching and Assessing for Understanding

## (Pre-K-2) Session

Connect assessment and instructional practices to provide meaningful information for classroom teachers. This session will share the development of an instructional plan with yearlong assessments that help classroom practices monitor students' mathematical understanding. This plan correlates with strategies from cognitively guided instruction.

Jennifer Marie Johnson
Des Moines Schools, Iowa

## Barbara Leise

Des Moines Schools, Iowa
Chris Curtis Mathews
Des Moines Schools, Iowa
Natalie Franke
Des Moines Schools, Iowa
John S. Johnson
Des Moines Schools, Iowa
Manchester Ballroom D (Hyatt)

## 414

## The Singapore Math for Helping Children Solve Challenging Mathematical Problems

## (Pre-K-5) Session

The TIMSS results show that Singapore students are consistently doing very well at the grade 4 math. How do they solve complicated and algebraic problems before learning algebra? The speaker will show Singapore Math methods in greater depth, linking theory, practice, and connection. The model method and other math strategies will be examined.

## Ho-Kheong Fong

Univeristy of Bahrain, Bahrain
20 B/C (Convention Center)

415

## Avoiding Misconceptions and Decreasing the Need for Intervention

## (Pre-K-5) Session

If we focus on meaning and consider the crucial learning phases when children are beginning their study of mathematics, we can prevent many misconceptions that cause children to be unsuccessful in mathematics.

## Kathy Richardson

Math Perspectives Teacher Development Center, Bellingham, Washington

6 F (Convention Center)

## 416

## More than Just Rabbits: Why Fibonacci Matters

(Pre-K-8) Session
In this playful, highly visual presentation, the presenter will reveal how you can use the story of Fibonacci to teach more than just number patterns. Learn how this medieval mathematician's tale connects with seven crucial disciplines: math, science, art, literature, history, language, and lasagna!

## Joseph D'Agnese

Henry Holt Books for Young Readers, New York, New York
15 B (Convention Center)

## 417

## Virtual or Not? Selecting Virtual Manipulatives for Effective Classroom Use (Pre-K-8) Session

Exploring mathematics with virtual manipulatives can be engaging and exciting. The question is, how can teachers effectively select a virtual manipulative for classroom use? The session will provide some guidelines and questions to consider that will help you take advantage of their potential.

## Johnna Bolyard

West Virginia University, Morgantown
Patricia Moyer-Packenham
Utah State University, Logan
6 E (Convention Center)

## 418

## Can Students Get the Right Answers for the Wrong Reasons? <br> (Pre-K-8, Preservice and In-Service) Session

Are your current assessments revealing what your students truly understand? Take a mathematical journey with Sarah and her teacher to identify why she is getting the right answers for the wrong reasons. Use informative diagnostic tasks designed to elicit Sarah's understandings, partial concepts, and misconceptions.

## Terri Morrison

Grafton Public Schools, Massachusetts
Elizabeth Ballroom H (Hyatt)

## 419

## Teach to the Test for Deeper Understanding

## (3-5) Session

Make the most of multiple-choice. Incorporate problem solving, critical thinking, and reading comprehension skills. These strategies are classroom-tested (pardon the pun) and proven to improve standardized test scores by as many as 30 percentile points while students gain deeper understanding of connections between math skills and concepts.

## Christine Losq

Consultant, Palo Alto, California
Edward A/B/C/D (Hyatt)

## 421

## Algebraic Thinking and the Language of Number Puzzles (3-8) Session

The language used in many number puzzles requires students to think algebraically. Participants will solve a collection of number puzzles and discuss the role that language plays in the algebraic thinking needed to solve the puzzles.

## Wade Hampton Sherard

Furman University, Greenville, South Carolina
2 (Convention Center)

## 422

## Go Math: Mobile Applications to Support

 Families' Everyday Math Use
## (3-8) Research Session

The speakers interviewed families with middle school students to learn how families use and talk about math at home. From that, they developed mobile applications to support families' problem-solving activities and discussions in everyday math. They will present the applications and discuss potential math links between home and the classroom.

## Kristen Blair

Stanford University, California
April C. Alexander
Stanford University, California

## Shelley Goldman

Stanford University, California
Manchester Ballroom B (Hyatt)

423

## Changing the Culture of Language for the Hispanic ELL Student in Mathematics

## (3-8, Preservice and In-Service) Session

Mathematics language and the mathematics register includes more than just the mathematical concepts; they are also vehicles to communicate mathematically. In multicultural classes, language is not only a tool but also a target. Come hear the challenges that our English language learner (ELL) students experience and some solutions to those challenges.
Noemi R. Lopez
Harris County Department of Education, Houston, Texas
7 B (Convention Center)

## 424 <br> Mathematical Learning Styles: Teaching So Everyone Can Learn

## (3-8, Preservice and In-Service) Session

Research shows that there are two very distinct learning styles in mathematics-linear and holistic. This session will teach characteristics of the two styles as well as teach strategies that meet the needs of both types of students in the same classroom.

Rita H. Barger
University of Missouri-Kansas City
Salon 3 (Marriott)

## 425

## How SMART ${ }^{\text {TM }}$ Is Your Chalkboard? (6-8) Session

Transform your old math lessons into SMART lessons. Learn how to teach your current lessons using a SMART Board. See strategies to encourage students' participation at the board. Classroom teachers will present ways to create and use SMART Board manipulatives and games to generate engaging lessons. Audience participation is required!

## Michelle Meehan

Kenmore Middle School, Arlington, Virginia
Jill Lyttle
Kenmore Middle School, Arlington, Virginia
Elizabeth Ballroom A (Hyatt)

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## 426

## Casting for Knowledge in the Mathematics Classroom

## (6-8) Session

Over the last three years, 80 middle school educators in North Texas have participated in Teacher Quality Grant programs producing podcasts and vodcasts. This presentation will demonstrate how to create, edit, and publish broadcasts that will enhance middle school mathematics teaching.

## Vanessa E. Huse

Texas A \& M University-Commerce
Maribeth L. McAnally
Texas A \& M University-Commerce

## Susan Bauer

Ursuline Academy of Dallas, Texas
Manchester 1/2 (Marriott)

## 427

## Use Rich Problems to Teach, Connect, and Extend Hard Middle School Concepts

## (6-8, Higher Education, Preservice and In-Service) Session

Develop rich problems that start with accessible questions but continue with probing questions that increase in difficulty to challenge the most able students. Rich problems provide all students the opportunity to succeed and allow the most able to continue to deepen knowledge about important concepts. A set of such problems is presented.

## Carol Reed Findell

Boston University, Massachusetts
Salon 4 (Marriott)

## 428

## Using Small Groups with Linguistically Diverse Students

(6-12) Session
TODOS: Mathematics for ALL presentation
You can use groups with linguistically diverse students. The speakers will summarize research on using groups with bilingual students, work on a proportional reasoning task you can use in your classroom, discuss cases of linguistically diverse students working on the task, and consider how to apply principles from this presentation to your teaching.

## William Zahner

University of California at Santa Cruz
Griselda Marlene Velazquez
University of California at Santa Cruz
17 B (Convention Center)

429

## Grow Beasts: Growing Students' Understanding of Ratio, Proportions, and Slope

(6-12) Session
Grow Beasts: plunk 'em in water and four days later they've grown! Students measure, estimate, predict growth rates, measure some more, compile data, plot points, crunch numbers, and generally get excited, using math to make sense in an inquiry environment. Come to the session and time-warp through the process. Leave with a plan and a Grow Beast.
Mark Roddy
Seattle University, Washington
Elizabeth Ballroom C (Hyatt)

## 430

## Using Technology to Differentiate Instruction and Activate Learning for All Students in Your Math Classroom

SMART Boards and TI-Navigators in high school classrooms: share strategies for differentiating algebra instruction, and use these same tools in Algebra 2, statistics, and precalculus to deepen instruction. After a review of the SMART Board and the TI-Navigator, participants see new, advanced features that increase students' achievement.
Donna Johnson
Caroline County Public Schools, Denton, Maryland
Manchester Ballroom C (Hyatt)

## 431

> Newly Prepared Secondary School Mathematics Teachers in Urban Schools: Their Pedagogy and Students' Learning

## (6-12, Preservice and In-Service) Session

Benjamin Banneker Association presentation
This study examines the pedagogical approaches that urban secondary school mathematics teachers use in their classrooms and their effects on students' learning. Data was collected through questionnaires and interviews and analyzed using a phenomenological approach revealing mixed results.

Pier Angeli Junor Clarke
Georgia State University, Atlanta
Denise Natasha Brewley-Corbin
Georgia Gwinnett College, Lawrenceville, Georgia
Marsha McCrary-Barron
Georgia State University, Atlanta
16 B (Convention Center)

## 432

## Mathematical Field Trips: Geometrical Entree to Worlds of Art and Cultures

## (6-12, Preservice and In-Service) Session

Examine multicultural artwork through the lens of geometry as you "visit" museums around the world. The presenters will share experiences of both actual and virtual fieldtrips that place geometry, symmetry, tessellations, and transformations in the context of art and culture. Students' work will be shared.

## Cara Melina Goldberg

Boston University, Massachusetts
Pamela Ann Halpern
Salem State College, Massachusetts
Manchester Ballroom H (Hyatt)

Zalman Usiskin
University of Chicago, Illinois
Elizabeth Ballroom D/E (Hyatt)

## CAS: More than a Turbo Pencil

## (9-12) Session

Handheld computer algebra systems (CAS) have been around for more than twenty years. This session will focus on how they can be used as instruments that have pedagogic value. Issues of equity, symbolic fidelity, and using CAS to make mathematically meaningful connections will all be addressed.

## Mark Howell

Gonzaga High School, Washington, D.C.

435

## Ruling Out Chance

## (9-12) Session

This session will examine the connections between probability and statistical inference. Activities will be presented that help students understand the concept of a sampling distribution and how the conclusions in hypothesis tests and the interpretation of confidence intervals and margin of error relate to probability.

Roxy Peck
California Polytechnic State University, San Luis Obispo
Douglas Pavilion D (Hyatt)

## 436 <br> Using the Concept of Derivatives to Investigate Integrals: A Lesson Study (9-12) Session

How do you teach the concept of integrals prior to calculus? This session describes a lesson study connecting conceptual understanding of derivatives to integrals. You will watch video of eleventh graders working collaboratively using their knowledge of rate of change to predict graphs of original functions from graphs of derivatives.

Matsuo Marti
Jones College Prep High School, Chicago, Illinois
Jessica Fulton
Jones College Prep High School, Chicago, Illinois
John Remiasz
Jones College Prep High School, Chicago, Illinois
Marina G (Marriott)

## 437

## Algebra Goes to the Movies (9-12) Session

How can a teacher introduce the material in the next chapter of an Algebra 1 or 2 textbook in an interesting way? Let the students help. Connect your students' interests in movies with algebra through this unique and engaging poster project. Students will use communication, creativity, and evaluation to present the content of the new chapter.

## Lynda Wormell

California State University, Northridge
Salon 1/2 (Marriott)

438

## New Approaches to the Fourth Year of High School Mathematics

## (9-12, Higher Education) Session

Linear algebra can bring algebraic and geometric thinking together in ways that reinforce both. Participants will sample activities from a new, NSF-funded curriculum, drawing on vector algebra, geometry, and equations of lines and planes, and look at some of the rich applications of the subject.The only background required is second-year algebra.

## Kevin Waterman

Education Development Center, Newton, Massachusetts
Stephanie Ragucci
Andover High School, Massachusetts
14 B (Convention Center)

## 439

## Stimulating Interest in Statistics through the Use of Government Data

## (9-12, Higher Education) Session

Much statistical information of interest to students' daily lives are available on public Web sites maintained by federal statistical agencies. The speaker will show examples of this data, describe how to access it, and consider how to present it to stimulate students' interest in statistics and encourage them to consider careers in public service.

## Ron Wasserstein

American Statistical Association, Alexandria, Virginia
4 (Convention Center)

## 440

## Unexpected Expectations

(9-12, Higher Education) Session
Mathematical expectation provides a means of quantifying the expected outcome of an experiment involving more than one possible outcome. This talk will present the quirkier (paradoxical) issues that can arise, including Newcomb's paradox, Parrondo's paradox, and the Prisoner's Dilemma.

## Leonard Wapner

El Camino College, Torrance, California
11 B (Convention Center)

441

## The Pythagorean Theorem and Ptolemy's Theorem

(9-12, Higher Education) Session

The speaker will look at the Pythagorean theorem again, and show the result using a less famous theorem in geometry called Ptolemy's theorem. Geometry problems for the classroom will be shown.

Gail Marie Nord
Gonzaga University, Spokane, Washington
Molly A/B (Hyatt)

## NAB 442 <br> Succeeding in Challenging Times: Where to Start and What Next

(9-12, Preservice and In-Service) Session
It's probably not what you expected. Learn how to get ready; how to start; how to take the next steps to be successful; and how to finish the year. From working with challenging students to challenging students, from administrators to parents, look for ways to engage toward success.

Mike Stewart
Ventura Unified School District, California
10 (Convention Center)

## 443

A "Founders of Mathematics" Project: More than a Biographical Listing
(Higher Education, Preservice and In-Service) Session
Tired of student's "cut and paste" papers? This Founders of Mathematics project requires insights from the student beyond summarizing. Students must estimate a founder's worth to a particular field as well as predict what it will take for the student to become "famous" in the course being taken. A "recipe for success" will be available.

## Stephen LaVerne Brown

Olivet Nazarene University, Bourbonnais, Illinois
Douglas Pavilion B (Hyatt)

## 444

## Response to Intervention (Rtl) and

 Mathematics: Help for Struggling Students (Higher Education, Preservice and In-Service) Session The three-tiered RtI strategy will be discussed using examples of problem-solving instructional strategies that focus on teaching mathematics in context. Relevant research on RtI initiatives in mathematics, including technology resources, will be presented and synthesized into a take-home checklist.
## Dolores Burton

New York Institute of Technology, Old Westbury
6 B (Convention Center)

## 445

## Doing What Works: A Multimedia Web Site Highlighting Research-Based Practices

## (Preservice and In-Service) Session

Explore learning what works, seeing how it works, and doing what works for mathematics topics included in the Web site "Doing What Works." Topics will include response to intervention in mathematics, encouraging girls in mathematics and science, crucial foundations of algebra, and major topics for school algebra.

## Clare Heidema

RMC Research Corporation, Denver, Colorado
Arlene Mitchell
RMC Research Corporation, Denver, Colorado
San Diego Ballroom B (Marriott)

## 446

Challenging Preservice Elementary School Teachers to Confront their Mathematical Knowledge: Opportunities in Content and Methods Courses
(Preservice and In-Service) Session
Helping preservice elementary school teachers develop deep mathematical knowledge for teaching is a goal in elementary programs. The speakers will share course projects that we have found useful for helping preservice teachers confront their gaps and develop deep mathematical knowledge for teaching.

Kay A. Wohlhuter
University of Minnesota-Duluth
M. Lynn Breyfogle

Bucknell University, Lewisburg, Pennsylvania
Amy Roth McDuffie
Washington State University-Tri-Cities, Richland
6 A (Convention Center)

## Come, Connect, Communicate

Inclusion and special education
Meet with educators who share your interests in inclusion and special education to discuss how we might improve the teaching and learning of mathematics. This colloquium provides an opportunity to network and establish relationships that can continue beyond the conference as a resource for your professional growth.

Carlsbad (Marriott)

## Come, Connect, Communicate

 Intervention, Grades Pre-K-2Meet with educators who share your interests in intervention, grades pre-K -2 , to discuss how we might improve the teaching and learning of mathematics. This colloquium provides an opportunity to network and establish relationships that can continue beyond the conference as a resource for your professional growth.

EW 446.1
Raising Math Achievement through Adaptive Technology and Differentiated Instruction
(General Interest) Exhibitor Workshop
Learn about three innovative programs-Scholastic Math Inventory, Fraction Nation, and FASTT Math-that use computer-adaptive technology to provide universal screening, and adaptive instruction, and that build fraction and math fact fluency for grade 2 and up.

## Scholastic/Tom Snyder Productions

Scholastic/Tom Snyder Productions, Watertown, Massachusetts

Torrey (Marriott)

## EW 447

## Do Word Problems Scare the Daylights Out of Your Students?

(4-9) Exhibitor Workshop
Find out how Hands-On Equations ${ }^{\circledR}$ enables students to visually represent and solve word problems using game pieces, including age and consecutive number problems.

Borenson and Associates, Inc.
Borenson and Associates, Inc., Allentown, Pennsylvania
Columbia (Marriott)

## EW 448

Math Innovations: A New Middle Grades Mathematics Program
(6-8) Exhibitor Workshop
Developed using Curriculum Focal Points, Math Innovations encourages students to think like mathematicians with focus on verbal and written communication. Concepts are developed in depth with connections across grade levels in conjunction with computational fluency.
Kendall Hunt Publishing Co.
Kendall Hunt Publishing Co., Dubuque, Iowa
1 B (Convention Center)
eW 449

## CME Project: Math with a Twist (8-12) Exhibitor Workshop

Somewhere between an instructional approach that is traditional and one that is progressive lives another way to teach math: the CME Project. This four-year, NSF-funded project takes a problem-based, student-centered approach balancing instruction elements, forming good Habits of Mind, and developing a deep understanding of mathematics.

Pearson
Pearson, Upper Saddle River, New Jersey
1 A (Convention Center)

## 450

## Wake Up! Shake Up! Pick My Brain!

(Pre-K-2) Gallery Workshop
Discover quick, motivational ways of engaging students with brain teasers, puzzles, and more. Get your lessons off with a bang, recover from midday slumps, or add pizzazz to daily routines. With quick, ready-to-use tasks for all year, your class will be brimming with not-so-typical, very cool investigations.

## Giselle Irene Benoit-Humber

Eastern School District, St. John's, Newfoundland and Labrador, Canada

## Colleen Cheryl King

Eastern School District, St. John's, Newfoundland and Labrador, Canada

## Sharon Anne Power

Eastern School District, St. John's, Newfoundland and Labrador, Canada

11 A (Convention Center)

## 451

## A Star Model Makes the Mathematics Shine for All

(Pre-K-2) Gallery Workshop
TODOS: Mathematics for ALL presentation
Presidents' Series presentation
We all know that children learn in many ways and that multiple representations provide opportunities for all students to learn mathematics. Participants will experience classroom tasks, use a star model that emphasizes multiple representations to plan and initiate tasks, and consider the important mathematical ideas of the tasks.

## Nora G. Ramirez

TODOS: Mathematics for ALL, Tempe, Arizona 15 A (Convention Center)

## 452

## Singing to the Tune of Integrating Math, Literature, and Music

## (Pre-K-2) Gallery Workshop

This presentation will incorporate child-created songs into the elementary school classroom to reinforce math skills. Using Stuart Murphy's Math Start books as a springboard, the speaker will introduce participants to songs that integrate math, music, and literature.

## Minerva Harrell Smith

Discovery School @ Reeves Rogers, Murfreesboro, Tennessee

Elizabeth Ballroom B (Hyatt)

## 453

## Ten, It's Bigger than You Think <br> (Pre-K-2) Gallery Workshop

When you think of a student with good number sense, what comes to mind? Can your students link what they know about ten to larger numbers? The lessons in this participatory presentation build on early number sense, including counting; more, less and equal; writing and recognizing numerals; part-part-total relationships; and anchors of 5 and 10.

## Cheryl Akers

Howard County Public Schools, Columbia, Maryland Randi Blue
Howard County Public Schools, Elkridge, Maryland
Manchester Ballroom I (Hyatt)

## 457

## Engaging the Struggling Students: Building Understanding and Skill with Numbers

(Pre-K-5, Preservice and In-Service) Gallery Workshop

How do we help struggling students (and all students) build the core understandings of number along with the skills to use apply math? Learn activites and approaches to engage in the development of important number concepts. Learn how to engage your students as they go from understanding to skill development.

## Neil Pateman

University of Hawaii, Honolulu
Joseph Zilliox
University of Hawaii, Honolulu
8 (Convention Center)

## 458

## The Question-Discourse Connection: What Questions Should You Be Asking?

## (Pre-K-8, Preservice and In-Service) Gallery Workshop

We all want to involve our students in thought-provoking discourse, but how do we get there? A variety of question types will be described, including those based on the revised Bloom's taxonomy, question stems, alternative-response questions, and talk moves. Criteria for "quality questions" will be explored.

Sharon Young
Seattle Pacific University, Washington
Marina E (Marriott)

## 459

## Picture This: A New Sketchpad® in Grades 3-6

## (3-5) Gallery Workshop

The latest release of The Geometer's Sketchpad adds new, dynamic opportunities for exploring transformations with digital photographs. Attendees will receive teachers' notes and students' worksheets for a variety of activities. Bring a laptop with battery power so that you can jump right in!

## Daniel Scher

Key Curriculum Press Technologies, New York, New York

## 460

## Games as Assessment? How to Get More from Game Time

(3-8) Gallery Workshop
Math games engage students and offer a great opportunity for assessment. Participants will play games and learn strategies to gather data formally and informally about students as they play. The presenters will share resources and discuss challenges of expanding the role of games in your classroom to strengthen reasoning, writing, and more!

## Sara Torpey

Linden Public Schools, New Jersey
Paul V. Ridgway
Encyclopaedia Britannica, Chicago, Illinois
3 (Convention Center)

## 461

## Moving beyond Ratio Tables in the Development of Proportional Reasoning <br> (3-8) Gallery Workshop

Participants will explore proportional-reasoning problems and analyze the potential of the problems. The goal will be to understand the evolution of proportional reasoning with tasks that demand higher levels of reasoning than can be solved with ratio tables.

## Signe Kastberg

Indiana University Purdue University Indianapolis
Beatriz S. D'Ambrosio
Miami University, Oxford, Ohio
Kathleen Lynch-Davis
Appalachian State University, Boone, North Carolina
Manchester Ballroom G (Hyatt)

## 462

## Hands-On Activities and Questions That Stimulate Number Sense with Fractions (3-12) Gallery Workshop

Experience lessons showing how to use manipulatives and questioning to teach fractions, equivalent fractions, and operations with fractions. All activities and questions focus on students making sense of the mathematics being taught. Lessons are based on three stages of learning-concrete, pictorial, and abstract.

Barbara Schallau
East Side Union High School District, San Jose, California
Salon 6 (Marriott)

## Infusing Technology into the Classroom

(3-12, Preservice and In-Service) Gallery Workshop Benjamin Banneker Association presentation<br>Participants will sample five free and five inexpensive methods to "infuse twenty-first century learning" into the classroom. This hands-on presentation will introduce ten ways to enable students to experience complex concepts through engaging engineering, math, and science applications.

## Vanessa R. Wimberly

School District of Philadelphia, Philadelphia, Pennsylvania
Manchester Ballroom E/F (Hyatt)

## 464

## Milking Graphs for All They Are Worth!

 (6-8) Gallery WorkshopIs a graph worth 1000 words? Can we find the mean, median, and mode from a pie chart? Bar graph? Histogram? Box plot? Pictogram? What else do graphs tell us? Can we draw a histogram from a pie chart and vice versa? You will use graphs like never before and leave with activities your students can sink their teeth into on Monday.

## Polina Dina Sabinin

Boston University, Massachusetts
Jenny K. Tsankova
Roger Williams University, Bristol, Rhode Island
17 A (Convention Center)

## 465

In the Real World, No Measurement Is
Exact: Precision and Accuracy in Middle
School
(6-8) Gallery Workshop
This gallery workshop will help middle school teachers and trainers of teachers experience ideas related to precision and accuracy in a hands-on method using calculators and manipulatives. Participants will receive handouts and a CD of activities for a teaching unit.

## Mary Sarli

Edgewood Independent School District, San Antonio, Texas
Marina F (Marriott)

## 466

## Generalizing Algebraic Expressions Using Picture Patterns

## (6-8) Gallery Workshop

Join the speakers as they explore patterns using tiles and snap cubes. Use these patterns to help your students learn to write an algebraic expression for the $n$th term of a sequence. Leave with classroom ready activities that focus on using pictures rather then numbers to develop these algebraic expressions.
Vivian Flora Cyrus
Morehead State University, Kentucky
Christie Perry
Morehead State University, Kentucky
San Diego Ballroom C (Marriott)

## Don't Box Me In! Statistical Analysis and Interpretation

## (6-12) Gallery Workshop

Come construct a human box plot. Box plots are an important tool to compare data sets. Twenty-first century students need to be savvy consumers of data. Learn a variety of classroomtested ways to build students' understanding of this researchbased tool, including unpacking data sets of box plots and possible bar graph data displays.

## Lee Ann Pruske

Milwaukee Public Schools, Wisconsin
Paige Richards
School District of South Milwaukee, Wisconsin
Betsy A/B/C (Hyatt)

## 468

## Let's Play with Robots: Making Connections among Technology, Geometry, and Algebra

(6-12) Gallery Workshop
Want to play with a robot and learn mathematics? Come explore geometric and algebraic activities while using robotics! Participants will receive lessons and activities that allow students to make connections among technology, algebra, and geometry. The presenters will also share students' feedback from such activities.

## Rachelle Meyer

Baylor University, Waco, Texas
Trena Wilkerson
Baylor University, Waco, Texas

## Geoff Price

Carver Academy, Waco, Texas
Elizabeth Ballroom G (Hyatt)

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472

## Six Degrees of Separation: Making Connections

## (9-12) Gallery Workshop

How are E.T. and the Sistine Chapel, the Konigsberg Bridge and submarines, and the London Underground and networks connected? Help students discover threads that connect people, events, ideas, and innovations through presentations, center activities, projects, and games. Connections provide real-world context to make sense of mathematical ideas.

Chris Rumsey Mackmin
Braden River High School, Bradenton, Florida
Linda Shepard
Braden River High School, Bradenton, Florida
Manchester Ballroom A (Hyatt)

## 473

## ProofBlocks: A Visual Approach to Logic and Proof

(9-12) Gallery Workshop
Learn a new, visual format for introducing geometric proof that uses manipulatives to support the development of logical reasoning. Participants will try out the ProofBlock format themselves on whiteboards and leave with the resources and worksheets necessary to implement it in their own classrooms.
Jennifer Dirksen
San Mateo High School, California
Jinna Hwang
Francis Polytechnic High School, Sun Valley, California
Marina D (Marriott)

## 474

Rationally Speaking: Exploring Rational Functions with Illuminations and ExploreLearning Activities
(9-12, Higher Education) Gallery Workshop
Participate in classroom-ready activities from NCTM's Illuminations and ExploreLearning's gizmos that help students make connections among rational functions, their graphs, and various contexts. How to integrate the computer simulations successfully with whole-group instruction will be discussed.

## Jennifer Wall

Northwest Missouri State University, Maryville

## Margaret Buerman

Northwest Missouri State University, Maryville
9 (Convention Center)

NR145

## Struggling Math Students: Strategies to Challenge Challenging Students

(9-12, Preservice and In-Service) Gallery Workshop
New high school math teachers are often assigned classes of students having challenges with math. Learn strategies for engaging students, building success, and learning math all at the same time.

Connie Schrock
Emporia State University, Kansas
14 A (Convention Center)

11:00 a.m.-12:00 noon
476
Women and Mathematics Education: Where We Are Today
(General Interest) Session
Presidents' Series presentation
Women and Mathematics Education presentation
This session will describe the advances and challenges that women and girls in mathematics deal with today. What has changed and what has not changed will be the focal points.

## Judy Werner

Slippery Rock University, Pennsylvania
10 (Convention Center)

## 477

## My Favorite Mathematical Paradoxes

(General Interest) Session
Nothing beats a good paradox for convincing people that they should know some mathematics: these are the speaker's favorite mathematical paradoxes gathered over the years. Some will be familiar, but they put a new spin on some old classics. There should be something new for almost everyone.
Dan Kennedy
Baylor School, Chattanooga, Tennessee
20 A (Convention Center)


# Connections for Equity: Math, Language, Culture, and Context 

(General Interest) Session
Iris M. Carl Equity Address
We don't teach mathematics; we teach students who come to us with diverse academic backgrounds, cultures, and languages-even if they were born in the United States. The speaker will discuss strategies for differentiating instruction to address these differences and to promote learning with understanding-for ELL and ALL.
The annual Iris M. Carl Equity Address was established to underscore the critical need for collective action in advancing understanding of equality and equity in education. Inaugurated in 2008, the address commemorates Iris Carl's lifelong commitment to educational equity and celebrates the vision and inspiration that she provided for achieving the goal of "more and better mathematics for all children." Each year a distinguished scholar who is recognized for leadership and action related to equality in mathematics education is invited to deliver this featured address.

## Miriam A. Leiva

TODOS: Mathematics for ALL, Harrisburg, North Carolina 20 B/C (Convention Center)

## 479

## The Power of Articulation through a Mathematics Vertical Team

## (General Interest) Session

Five nonunified, rural districts have made it to their ninth year as a successful mathematics vertical team. Using books and blogging has empowered this team not only to survive but also to thrive despite leadership changes and financial cutbacks. A panel will share how they have bridged grade level, school, and district boundaries for shared success.

## Stephanie Verners

Fresno County Office of Education, California
Edward A/B/C/D (Hyatt)

## 480

## Understanding Title 1 and What It Can Mean for You and Your Math Students (General Interest) Session

Learn from two Title 1 state directors what Title 1 can (and cannot) do in districts, schools and classrooms. Learn why this is important for teaching and learning math and what you need to know to go back and connect with the right people in your school and district.

## Nancy Konitzer

Arizona Department of Education, Phoenix

## Roberta Schlicher

Virginia Department of Education, Richmond

## 481

## A Closer Look at Primary Programs and Developing Number Sense

## (Pre-K-2) Session

Math programs at the primary level vary in how they develop number sense and base ten unitizing. Even when similar tools are used, strategies and implementation may vary and affect student understanding differently. Drawing from Asian and U.S. texts/programs, we will discuss the implications of these differences.

Mary N. Leer
School District of Lancaster, Pennsylvania
Makoto Yoshida
William Paterson University, Wayne, New Jersey
14 B (Convention Center)

## 482

## A Foundation in Number Sense Affects All Grades

(Pre-K-2) Session
See how one school has analyzed number sense from kindergarten to second grade. This presentation will include discussing the importance of number sense for the success in future grades and how we have developed a number-sense recovery program for our youngest students.

Katie Gilmore
Mount Vernon Woods Elementary School, Alexandria, Virginia
Megan Gregory
Mount Vernon Woods Elementary School, Alexandria, Virginia
Elizabeth Sampson
Mount Vernon Woods Elementary School, Alexandria, Virginia

2 (Convention Center)

## 483

## Teaching with a SMART ${ }^{\text {TM }}$ Board: It's a SMART Thing to Do

(Pre-K-2) Session
Are you looking for more ways to use a SMART Board in your classroom? Learn how to use SMART Board technology in everyday math lessons and receive a list of Web sites that include math games and lessons that meet each of the NCTM strands for primary school students. Be prepared to get involved in this fun, interactive session!

## Heather Youngblood

Springfield Public Schools, Missouri
Cary Sikes
Springfield Public Schools, Missouri
Elizabeth Ballroom A (Hyatt)

484

## The Amazing Race: A Mathematical Adventure

(Pre-K-5) Session
Looking for a fun theme to stimulate your family math night? Come to our session to hear about an exciting theme that provides rigorous mathematics activities within a social studies and geography theme. Participants will receive an extensive handout as well as many good tips for planning a successful family math night.

Rebecca Sue Borowski
Ponderosa Elementary School, Fayetteville, North Carolina
Kathelyn Denman
Ponderosa Elementary School, Fayetteville, North Carolina
Marina G (Marriott)

## 485

Response to Intervention (RTI) for Teaching Number Concepts and Operations to Struggling Grades K-4 Students (Pre-K-5) Session
Join the speaker as she discusses how to meet the needs of all students using the RTI model for teaching number concepts and operations to children in grades $\mathrm{K}-4$. Discussion will include topics such as intervention levels, strategies, assessments, and specific examples of lessons you can immediately use with students.

## Kimberly Rimbey

Rodel Foundation of Arizona, Scottsdale, Arizona
6 C (Convention Center)

## 486

## Seeing Is Believing: Communication and

 Problem Solving Using Lesson Studies(Pre-K-5, Preservice and In-Service) Session
The presentation team from a grades K-5 urban elementary school will engage participants in a multimedia presentation and discussion of their journey to increase students' achievement in mathematics through a modified lesson study approach focused on problem solving and communication in mathematics. Professional development protocols will be shared.

## Thelma A. Davis

Robert Lunt Elementary School, Las Vegas, Nevada
Jennifer Spinos
Robert Lunt Elementary School, Las Vegas, Nevada
Peter Schmit
Robert Lunt Elementary School, Las Vegas, Nevada
Jamie Galgana
Robert Lunt Elementary School, Las Vegas, Nevada
Virginia Usnick
University of Nevada, Las Vegas
Elizabeth Ballroom D/E (Hyatt)

## 487

## Singapore Math: Contextual Word Problem Solving Leads to Conceptual Mastery

## (Pre-K-8) Session

"Sam bought 3 shirts and 2 pairs of pants for $\$ 67.30$. Each pair of pants costs $\$ 2.40$ more than each shirt. What was the cost of 1 pair of pants?" This Singapore Math fifth-grade problem is an example of a challenging, real-life problem that students solve using bar models rather than algebra. Learn the how and why of Singapore Math.
Tricia Salerno
Benchmark School, Phoenix, Arizona
Salon 1/2 (Marriott)

## 488

Math with Meaning-Success the Singapore Way: Foundations of Number Sense

## (Pre-K-8) Session

Attendees will learn practical-not theoretical-place-value, computation, and mental-math strategies used in Singapore, where students consistently score highest in international math studies. Learn how to emphasize conceptualization and incorporate computation and mental-math strategies into your existing math curriculum.

## Rolff Christensen

Staff Development for Educators, Peterborough, New Hampshire

Manchester Ballroom H (Hyatt)

## 489

## Making Sense of Math: Demystifying the Algorithms My Teacher Taught Me

## (Pre-K-8, Preservice and In-Service) Session

Rule \#1: Math makes sense. Rule \#2: Everyone will be good at math. Experience how to help grades K-7 students learn the foundations to algebra through arithmetic. Get students to make sense of math without tricks and rules they don't understand. Learn how to support teachers in building in-class interventions focused on big math ideas.

## Ivan Leonel Alba

San Diego Unified School District, California
7 B (Convention Center)

## 490

## Teaching Mathematics to Students with Special Needs: Connecting and Collaborating

## (3-5, Preservice and In-Service) Session

Hear the results of a coplanned and cotaught mathematics methods course for teachers of students with special needs. Aligned with NCTM Standards as well as recent Response to Intervention initiatives, successful activities and the results of teachers implementing these strategies in their classroom will be shared.

## Amy Lingo

University of Louisville, Kentucky

## Karen Karp

Board of Directors, National Council of Teachers of Mathematics; University of Louisville, Kentucky

## Monica Delano

University of Louisville, Kentucky
Ginevra Courtade
University of Louisville, Kentucky
Douglas Pavilion D (Hyatt)

## 491

## You're Doing Algebra: Making Algebraic Reasoning Explicit for Young Learners

## (3-8) Session

Algebra remains the gatekeeper for advanced math classes, yet using algebraic reasoning begins in elementary school. Join the speakers to investigate math tasks across content strands that facilitate elementary and middle school students' algebraic thinking. Make generalizations about patterns in our number system and the world around us.
Temple A. Walkowiak
University of Virginia, Charlottesville
Kateri Thunder
University of Virginia, Charlottesville
Beth Buchholz
Albemarle County Public Schools, Charlottesville, Virginia
4 (Convention Center)

## 492

Making Memories in the Math Classroom (3-8) Session
Enter the wonderful world of recreational mathematics and math magic. Enthusiastic teaching will be modeled as mathematical concepts are presented in a spirit of play. Teachers will learn hands-on activities that connect concepts with context. Come prepared to experience the beauty and fun of mathematics.

## Charles Sonenshein

Wright State University, Dayton, Ohio

## 493 <br> Making Connections: Long Division of Whole Numbers and Algebraic Expressions

## (3-8) Session

This session will feature middle school students from diverse linguistic backgrounds discussing connections they made between the long division arithmetic processes and understanding of whole numbers and algebraic expressions. Videotaped interview clips and discussion of analyses will be shared to highlight students' mathematical thinking.
Cynthia Oropesa Anhalt
University of Arizona, Tucson
Joseph Cuprak
Tucson Unified School District, Arizona
Manchester Ballroom D (Hyatt)

## 494 <br> Fraction as Ratio on the Cartesian Coordinate Plane (3-8) Session

The speaker will investigate how using the Cartesian coordinate plane to represent fraction as ratio can provide a visual representation of least common multiples, equivalent fractions, fraction addition and subtraction, and converting fractions to decimals and percents, all done graphically.
Anne M. Collins
Lesley University, Boston, Massachusetts
Salon 3 (Marriott)

## 495 <br> Paint Bucket Polygons: Geometry Concepts in High Definition

## (3-8, Preservice and In-Service) Session

What is a polygon in elementary school? The answer is not as simple or closed as you may think! Experience activities the speakers have developed with children and their teachers to build more sophisticated notions of geometry. They discuss features of photo-editing software as a tool to foster discussion and debate.

## Suzanne Harper <br> Miami University, Oxford, Ohio

Michael Todd Edwards
Miami University, Oxford, Ohio

## 496

## Good Questions: A Great Way to Differentiate Instruction

(3-12) Session
Asking just the right questions allows for differentiating instruction to meet a broad range of students' needs without ignoring curricular requirements. Examples, along with students' responses, will be shared to show how a rich mathematical environment can be created for all students in the class, whether struggling, average, or gifted.

## Marian Small

University of New Brunswick, Fredericton, Canada
20 D (Convention Center)

## 497

## Increasing Mathematics Achievement through Simple, Research-Based Strategies (6-8) Session

This interactive presentation will explore strategies that help diverse learners connect to the content and increase mathematical achievement. Participants will walk away with seven effective, easy-to-use, research-based strategies that can be implemented immediately.
Mary J. Mitchell
Kean University, Union, New Jersey
Robin D. Roberts

5 B (Convention Center)

## 498

## Stem-and-Leaf Plots: It's Not a Botany Activity!

(6-8) Session
Stem-and-leaf plots organize data, but can students use the plots to analyze a situation? This session will explore organizing basic science experiment data in enhanced stem-and-leaf plots, relating them to multiple bar graphs, and identifying the information presented. Box-and-whisker plots will further illustrate characteristics of the data set.

## Patricia Lucido

Rockhurst University, Kansas City, Missouri
Cheryl Malm
Northwest Missouri State University, Maryville 6 D (Convention Center)

499
Infusing Algebraic Thinking into All Strands of the Math Curriculum

## (6-8) Session

Do you sometimes think there just isn't enough time to teach algebraic thinking? Take heart. The presenters will share practical, classroom-tested ideas for including algebraic thinking as natural extensions of your current work in number, measurement, geometry, and chance and data.
Ann Lawrence
Consultant, Washington, D.C.
Charlie Hennessy
Holy Trinity School, Washington, D.C.
Douglas Pavilion B (Hyatt)

## 500

## Adding, Subtracting, Multiplying, and Dividing Fractions Using NCTM Resources (6-8) Session

Have you ever wondered about the math of changing gears on your bicycle? Gear ratios are just one application of operating on fractions that you will explore in this session. You will gain hands-on experience investigating multiple ways of making operations on fractions more engaging for students, by using applets, games, and writing prompts.

## Sarah DeLeeuw

National Council of Teachers of Mathematics, Reston, Virginia
Julia Zurkovsky
National Council of Teachers of Mathematics, Reston, Virginia

Manchester Ballroom C (Hyatt)

## 501

## Implementing the SIOP Model in the Middle School Mathematics Classroom

## (6-8) Session

Learn how to use the sheltered instruction observation protocol (SIOP) model to plan and deliver instruction in the math classroom. SIOP unifies a variety of methods and best practices for teaching content to English language learners (ELLs). See how to customize instruction for ELLs at different levels of English proficiency using research based strategies and techniques.

## Melinda Riccardi

Fresno County Office of Education, California
Jonathan R. Dueck
Fresno County Office of Education, California
San Diego Ballroom B (Marriott)

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## 502

## Findings from Four Countries Regarding Prospective Teachers' Knowledge of Addition of Fractions

(6-8, Preservice and In-Service) Research Session<br>Prospective elementary school teachers in Northern Ireland, South Africa, Hong Kong, and the United States have similar difficulties understanding fraction addition. Participants will create and analyze fraction addition problems, making connections of concepts and context. They will see how the research findings connect to classroom practices.

## Rose Elaine Carbone

Clarion University, Pennsylvania
Gregory A/B (Hyatt)

## 503

## Linear Functions: Much More than <br> $y=m x+b$

(6-12) Session
Every linear function is not a line. Yet, many algebra students react to the equation $y=3 x+6$ by making a table, plotting the points, and connecting them to form a line. This session will examine class-tested ways of helping students get a deep understanding of these important functions.

## Jim Rubillo

Former Executive Director, National Council of Teachers of Mathematics; DeSales University, Center Valley, Pennsylvania

6 A (Convention Center)

## 504

Telescoping Sequences: The Mathematics of Recursively Imbedded Expressions

## (6-12, Higher Education) Session

In their studies, most students will encounter simple imbedded expressions, like a fraction where both numerator and denominator contain fractions, or a radical inside a radical. The speaker will explore these types of expressions more deeply, relate them to sequences or recursion, and discover the unique reasoning that "telescoping" invokes.

## Mike Reiners

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

## 505 <br> Fostering Conceptual Understanding through Reading-Math Connections

## (6-12, Higher Education) Session

The conceptual density of mathematics texts presents a challenge to secondary school students who struggle to understand how what they read translates into mathematics. This session addresses this challenge by focusing on reading strategy as a way to foster connections among texts and other forms of conceptual mathematics representations.

Antony T. Smith
University of Washington Bothell
Robin Angotti
University of Washington Bothell
Manchester 1/2 (Marriott)

## 506

## Making Connections: Multiple Representations in Algebra 1

## (6-12, Preservice and In-Service) Session

Participate in activities that help find the connections between a rule, graph, table, and context. Learn ways to help students move from each representation to the others, developing deep understanding of multiple ways to solve problems. Teachers will receive ideas and materials that they can use in their own algebra classrooms.

## Glenda Arlene Wilkins

California Mathematics Council, Forest Falls, California
16 B (Convention Center)

## 507

## It's Their Web 2.0 World: You're Just Teaching in It

## (9-12) Session

So take advantage of all the opportunities that Web 2.0 provides! Look at practical, useable, classroom-tested ideas on expanding formative and summative assessments onto the Web and using free, and almost free, online instructional tools to enliven and enrich classes from Algebra 1 through calculus.

## Calvin Armstrong

Appleby School, Oakville, Ontario, Canada

## 508

## Polygons: Inside-Out and Beyond

(9-12, Higher Education, Preservice and In-Service) Session
Reflect a regular polygon across an edge, and repeat. Explore fascinating results with any polygon. Form fractional and negative polygons, derive the formula, and consider polygons with an irrational number of sides, all on the TI-Nspire. A tns file will be given.

## Paul Williams

Red Deer College, Alberta, Canada
Manchester Ballroom B (Hyatt)

## 509

## Creating Connections with Inquiry Questions and Action/Consequence Documents

## (9-12, Preservice and In-Service) Session

This presentation will discuss types of inquiry questions that promote student understanding of mathematical content. Examples of such questions will be used with computerbased environments (action/consequence documents) where students are allowed to act on mathematical objects and transparently observe the consequences of their actions.

## Wade Ellis

West Valley College, Saratoga, California
Elizabeth Ballroom C (Hyatt)

## 510

## Teach AP Statistics Next Year, with TI-Nspire ${ }^{\text {TM! }}$

## (9-12, Preservice and In-Service) Session

Considering teaching AP Statistics? A member of the College Board's AP Statistics (Test) Development Committee will give you an introduction to the course using TI-Nspire, examples of typical problems, a guided timeline so that you can be prepared to teach the course successfully starting in August, and (hopefully) the confidence to do so.

## John F. Mahoney

Benjamin Banneker Academic High School, Washington, D.C.

Salon 4 (Marriott)

## 511

## Building a Community of Scholars in a Teacher Education Program

## (Higher Education) Session

The speakers are committed to placing highly qualified teachers in high-need schools. They will discuss their Mathematics Education Teaching Scholars program for future secondary school teachers, including criteria development, standards, and programmatic details.

## Harry T. Washington

North Carolina State University, Raleigh
Hollylynne Stohl Lee
North Carolina State University, Raleigh
6 E (Convention Center)

## 512

# Rethinking Classroom Assessment with a Purpose in Mind: An International Perspective 

(Higher Education) Session
This session will explore classroom assessment in two-year colleges in the United States and in nonuniversity tertiary institutions in other countries. Cultural and educational experiences from different countries using classroom assessment to guide, improve, and modify teaching to enhance students' learning will be discussed.

## Richelle Blair

Lakeland Community College, Concord, Ohio
Sadie Bragg
Burough of Manhattan Community College, New York, New York

Elizabeth Ballroom H (Hyatt)

## 513

Better Teacher Retention through Lesson Study

The speaker will examine the collaborative practice of Japan's model of preservice introduction, Lesson Study, and how we are using this model at the university level. We are preparing preservice teachers to enter the education profession as partners who are ready to build learning communities centered on students' learning and styles in the field.

Tracey Everett Carter
Chicago Lesson Study Group, Chicago, Illinois
15 B (Convention Center)

## Come, Connect, Communicate Coaching

Meet with educators who share your interests in coaching to discuss how we might improve the teaching and learning of mathematics. This colloquium provides an opportunity to network and establish relationships that can continue beyond the conference as a resource for your professional growth.

Carlsbad (Marriott)

## Come, Connect, Communicate

## Intervention, Grades 6-12

Meet with educators who share your interests in intervention, grades 6-12, to discuss how we might improve the teaching and learning of mathematics. This colloquium provides an opportunity to network and establish relationships that can continue beyond the conference as a resource for your professional growth.

Del Mar (Marriott)

11:30 a.m.-12:30 p.m.

## CW 514

## PowerTeaching: Mathematicsan Equitation for Success! <br> (General Interest) Exhibitor Workshop

Developed by the Success for All Foundation, PowerTeaching: Mathematics is a curricular framework that is composed of research-proven instructional strategies that increase student achievement. PowerTeaching provides teachers with a clear and simple structure for framing their mathematics instruction no matter which curriculum or textbook they use.

## Success for All Foundation

Success for All Foundation, Baltimore, Maryland
1 A (Convention Center)

## CW 515

## Come Discover "We Discover Math" for Pre-K Students

## (Pre-K) Exhibitor Workshop

Newly released in fall 2009, "We Discover Math" is Kendall Hunt's research-based Pre-K mathematics program. Through children's literature, students explore the important mathematical content recommended by both NCTM and NAEYC.

## Kendall Hunt Publishing Co.

Kendall Hunt Publishing Co., Dubuque, Iowa
1 B (Convention Center)

## 12:30 p.m.-1:30 p.m.

## 516

## Using Upside-Down Teaching to Bring Out the Thinking of Every Student

## (General Interest) Session

Communication and the other NCTM process standards can help us transform the way we teach from the primary grades through high school. When teachers structure classrooms so that students do the thinking and the talking, even challenging mathematics can become accessible to students, and even students who have struggled can become successful.

## Cathy Seeley

Past President, National Council of Teachers of Mathematics; Charles A. Dana Center, University of Texas at Austin

20 A (Convention Center)

517
Spreadsheets: An Amazing Tool to Enliven and Animate Mathematics
(General Interest) Session
This talk will give numerous examples of how spreadsheets may be used to animate different graphs that arise in the secondary school curriculum.

Robert L. Devaney
Boston University, Massachusetts
6 B (Convention Center)

## 518

## Building a Productive Classroom Environment: Talking Mathematics and Connecting Ideas <br> (General Interest) Session

The language of mathematics is a powerful, but underdeveloped, skill in our classrooms. Helping students learn to talk mathematics and connect ideas is a challenge; however, the payoff is worth the effort. The speaker will focus on ways of developing mathematical discourse.

## Glenda T. Lappan

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

> Douglas Pavilion D (Hyatt)

## 519

## Coaching: It's Not Just for Athletics! (General Interest) Session

Come and hear how a math coach can assist with staff development, curriculum alignments, disaggregating data, differentiating instruction, resources and demonstrating master teacher skills. With the help of our coach, our school has received four gold-star performance awards in math from the Texas Education Agency.

Melissa Cooper McCracken
Huntsville Independent School District, Texas
6 C (Convention Center)

## 520

## It All Adds Up: Games to Strengthen Number Sense

(Pre-K-2) Session
It'll all "add" up as you see student's number sense "multiply" with more than 20 fun games and activities. The best part is they require little to no preparation time, so you can "subtract" that and just start "adding" up all the learning you'll see on Monday.

## Cary Sikes

Springfield Public Schools, Missouri
Heather Youngblood
Springfield Public Schools, Missouri
4 (Convention Center)

## Word Problems: How Do They Make a Difference in Children's Development of Number Sense?

(Pre-K-2) Session
The presentation will discuss the main ideas of cognitive guided instruction, highlighting different types of word problems, and the development of children's strategies. The speaker will review several video clips from research and discuss how the distinctions among problem types are reflected in children selection of strategies.

## Myoungwhon Jung

Northern Illinois University, DeKalb
Molly A/B (Hyatt)
522


## Knock, Knock! Who's

 There?(Pre-K-5) Session
New ways to assess, that's who! Tired of the same old photocopied tests? So are your students! Take review and assessment to new levels that are engaging, thought provoking, and information filled. See students' practice and assessments from podcasts to PowerPoints to videos to fit-for-a-frame. Open the door to a new way to demonstrate mastery.
Catherine Kuhns has more than 25 years of teaching experience in grades K-4 classrooms, currently teaching fourth grade. She is the author of several books, including Number Wonders, Mathematical Art-o-Facts, Building Number Sense, and Word Problems for Model Drawing Practice (levels 1 and 5). She enjoys working with fellow teachers and sharing her passion for making math meaningful, connected, and engaging.

## Catherine Kuhns

Country Hills Elementary School, Coral Springs, Florida 20 B/C (Convention Center)

## 523

## Using Repeating Patterns to Think Functionally

(Pre-K-5) Session
Looking to go beyond "What's the core unit?" and "What comes next?" Young children are capable of thinking functionally at an early age, and exploring repeating patterns offers a solid starting point for this work. Come explore powerful strategies and activities that support the development of functional thinking in your students.

Melissa E. Hedges<br>Milwaukee Public Schools, Wisconsin<br>Beth Ann Schefelker<br>Milwaukee Public Schools, Wisconsin

524

## A Comprehensive Approach to Improving Mathematics Achievement: A Math-Science Partnership in Rural Wyoming

## (Pre-K-5) Session

Participants will discover a comprehensive assessment framework that identifies students' deficiencies in early numeracy. While identifying the deficiencies, participants will experience interventional activities that will help to build on conceptual understanding in numeracy.

Catherine Ann McAtee
Carbon County School District \#2, Saratoga, Wyoming
Elizabeth Ballroom C (Hyatt)

## 525

## Supporting Children's Sense Making in Number

(Pre-K-5) Session

## Presidents' Series presentation

The speaker will share activities that foster number sense through the exploration of patterns and relationships. Emphasis will be on thinking in collections and constructing meaning for ten as a unit. The activities can be used immediately in the classroom.

## Anne Reynolds

Kent State University, Ohio
Manchester Ballroom B (Hyatt)

## 526

## Number Sense versus Nonsense

 (Pre-K-5, Preservice and In-Service) SessionWe all know you can't teach common sense, so can you really teach number sense? Yes, you can! Learn strategies to help students with number sense. The speaker will also discuss some of the "nonsense" teachers sometimes use to foster number sense, and how it may unintentionally hurt a child's

Heather Nichol Larrabee
Louisa County Public Schools, Mineral, Virginia
Elizabeth Ballroom H (Hyatt)

## 527

## Zooming In on Number Lines: Connecting Whole Numbers, Decimals, and Fractions

## (3-5) Session

The image is fun and crystal clear. It's also deeply mathematical. The connections allow children to understand decimals and fractions and work as confidently and skillfully with them as with whole numbers. Practical ideas for your teaching will let you and students see numbers in a new way. Classroom video, handouts, PowerPoint will be available.

## Cindy Carter

Rashi School, Newton, Massachusetts

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## 528

## Base-Ten Blocks: What Is Their Educational Value?

## (3-5) Research Session

Children have to have the idea of "tens" to count objects by tens. The speaker asked 81 children in grades $2-4$ to count (1) 123 cubes by tens and (2) 6 ten-blocks and 12 one-blocks. Base-ten blocks were found to make counting by tens easier but did not teach the idea of tens. In second grade, only 58 percent counted the base-ten blocks by tens.

## Constance Kamii

University of Alabama at Birmingham
Edward A/B/C/D (Hyatt)

## 529

## Mathematics Education for the Twentyfirst Century: Spanning the Digital Divide

(3-5, 9-12, Preservice and In-Service) Session
This interactive session will explore effective use of instructional strategies to meet the needs of all students in mathematics by integrating NCTM's Principles and Standards with the National Educational Technology Standards and Performance Indicators for Teachers and the Technology and Pedagogy Content Knowledge model.

## Rhonda Bonnstetter

Southwest Minnesota State University, Marshall
Debbie Van Overbeke
Southwest Minnesota State University, Marshall
Michelle Beach
Southwest Minnesota State University, Marshall
Elizabeth Ballroom A (Hyatt)

## 530

## Modeling and Relating Fractions and Ratios in the Multiplication Table

(3-8, Preservice and In-Service) Session
Learning and teaching paths will be reported from grades 3-6 classroom research on differentiating and then relating fractions and ratios. These approaches enable students to outperform older students and reach high levels of understanding. Making math drawings and using the multiplication table enables students at all levels to understand.

## Karen C. Fuson

Northwestern University (Emerita), Evanston, Illinois
Dor Abrahamson
University of California, Berkeley
7 B (Convention Center)

## 531

## Are You Surrendering in Teaching Fraction Operations? <br> \section*{(3-8, Preservice and In-Service) Session}

This presentation will discuss how to incorporate different visual representations, including computer software and interactive Internet resources, to teach procedural knowledge and conceptual understanding of fraction operations. Participants will be guaranteed not to surrender in teaching fraction operations after attending this session!

Cheng-Yao Lin<br>Southern Illinois University Carbondale<br>Rong-Ji Chen<br>California State University San Marcos<br>Hsing Wen Hu<br>University of Wisconsin—River Falls

Manchester Ballroom H (Hyatt)

## 532

Skill Building versus Comprehensible Input: Live Demonstration of an EL Classroom (3-12) Session
TODOS: Mathematics for ALL presentation
Teachers will experience firsthand how students learn in an English learner (EL) classroom by participating in a fishbowl activity that uses two live demonstrations. One will use a traditional approach; the other, effective comprehensible input strategies. A whole-group discussion will follow.

## Pedro Vazquez

Bridgeport Public Schools, Connecticut
Herminio Manuel Planas
Bridgeport Public Schools, Connecticut
15 B (Convention Center)

## 533

Video Study Groups: The Focus Is on Your Students' Learning

## (3-12) Session

Video of students at work in each teacher's classroom will launch professional discussions about students' interactions, questions, and responses to instruction. This session will share lessons learned as well as protocols and sample video from the speakers' experience as facilitators of video study groups.

[^3]Manchester 1/2 (Marriott)

## 534

## Solving Equations + Multiple Representations = Students' Success <br> (3-12, Preservice and In-Service) Session

Treat algebra as a handy language for "unlocking secrets" (equation solving) and building mathematical models. Participate in a variety of innovative, engaging, nontraditional approaches for solving equations. These methods have been researched and tested and are designed to empower your students and move them to mastery!

Donna M. Davis
Baltimore City Public Schools, Maryland
Elizabeth Ballroom D/E (Hyatt)

## 535

## "How Steep It Is!" Connecting Geometric Angle and Algebraic Slope

## (6-8) Session

Prepare your students for the study of slope while helping them develop proportional reasoning. Help them describe, construct, and imagine their way from what they already know about steepness to the concept of slope.

## Diana Cheng

Boston University, Massachusetts
20 (Convention Center)

## 536

## A Nontraditional Equation-Solving

 Sequence for Struggling Learners
## (6-8) Session

Algebra for All: experience a nontraditional, multilesson, linear-equation-solving sequence, accessible to all learners, which employs the use of meaningful contexts, visuals, and manipulatives.

## Mark Goldstein

University of California at Los Angeles
Helen Chan
University of California at Los Angeles

## 5 B (Convention Center)

## 537

## Writing Activities in Mathematics for Middle and High School Students <br> (6-12) Session

Participants will learn writing-to-learn activities, such as annotation strategies for equations, graphs, or word problems, which will help students to monitor their understanding of those problems. They will also learn writing-as-assessment activities that will provide students with fun ways to demonstrate their knowledge of mathematical concepts.
Amy Alexandra Wilson
University of Georgia, Athens
Aaron Ross Wilson
Cottonwood High School, Salt Lake City, Utah
16 B (Convention Center)

## 538

Connections, Blogs, and Lesson Study
(6-12) Session
Learn about how to use connections through a lesson-study approach. Collaboratively planned lessons will be analyzed using technology, assessment alignment with instruction, and students' work. Student-response-centered blogs will be used to foster recognizing and using connections among mathematical ideas and in contexts outside mathematics.

José Francisco Sala García
Instituto de Educación Secundaria Sa Colomina, Ibiza, Balearic Islands, Spain

2 (Convention Center)

## 539

## The Golden Ratio: Connections to the World around Us from Ancient to Modern Times

(6-12) Session
The golden ratio has been an integral part of art and architecture for centuries. Known as the golden mean, it appears in basic constructions, Egyptian pyramids, Greek statuary and temples, Islamic Art, and paintings from the Renaissance to modern times. Historical examples and the creation of relevant projects will be explored.

Stephanie H. Cooperman
Chatham Middle School, New Jersey
Salon 1/2 (Marriott)

## 540

Algebra Readiness Tests: Is There One? (6-12) Session

In spite of efforts to teach algebra at all grade levels and to include all students in algebra, educators continue to seek an "algebra readiness" test. But algebra readiness tests generally don't work. What can or should we use instead? We will consider alternatives to standard testing for "algebra readiness."
Judith Mary Kysh
San Francisco State University, California
Salon 4 (Marriott)

## 541

Sketchpad® Dynagraphs Reveal Domain, Range, Composition, and Inverses of Functions
(6-12) Session
Dynagraphs are dynamic, behavioral representations of functions that promote an understanding of important properties of functions and are easily related to other representations. Dynagraphs emphasize the role of variables and the mapping of an input variable to an output variable. Participants will receive several ready-to-use activities.

## Andres Marti

Key Curriculum Press, Emeryville, California
17 B (Convention Center)

## 嶰 542 <br> Classroom Management and Motivation: How It Can Work for You

(6-12, Preservice and In-Service) Session
Understand how motivation and management works and does not work with students. What can you do? Learn to create situations and environments that motivate and engage students. Improve your classroom management skills, and support you in teaching math.

## James Middleton

Arizona State University, Tempe
10 (Convention Center)

544

## Using Maps in Mathematics: A Connections Activity

(9-12) Session
This activity connects mathematics to other subjects and areas such as cartography, art, and social justice and gives teachers a method for convincing their students of the merits of collaborative learning. There are three stages: motivation for collaborative group work, the four-color theorem, and social justice in maps.

## Brian Evans

Pace University, New York, New York
6 D (Convention Center)

## 545

Algebra in Motion: Improving Algebra
Understanding through Interactive
Computer Animations

## (9-12) Session

Harness the aptitude of your visual learners by exploring interactive computer animations (Sketchpad) that remove the abstraction from algebra and give it meaning. Appropriate teaching strategies also will be emphasized. Many assorted topics will be taken from Algebra 1, Algebra 2, and precalculus.

## Audrey Weeks

Calculus In Motion, Burbank, California
Douglas Pavilion B (Hyatt)

## 546 <br> Engaging and Challenging Tasks for Capstone Mathematics

## (9-12) Session

NCTM says, "Every student should study mathematics every year through high school, progressing to a more advanced level each year." This talk will present cognitively demanding problems and projects that solidify and connect a wide range of mathematical content that seniors have found engaging in a post-Algebra 2 alternative to precalculus.

Gregory D. Foley<br>Ohio University, Athens

## 543

## Titilating Topics from Trigonometry (9-12) Session

There is more to trigonometry than the unit circle. This session will explore the relationships of sides, angles, and cevians in a triangle; some unusual trigonometric identities; trigonometric representation of complex numbers; and inverse trig functions.

## David Wilson

Wake Forest University, Winston-Salem, North Carolina
11 B (Convention Center)

## 547

## Be a SMART Educator: Enhancing Mathematics Instruction using SMARTTM Software

## (9-12) Session

Want to be an effective teacher with dynamic notes, interactive examples, and a way to save all this hard work using an interactive whiteboard? This introductory session will include creating lesson plans using Notebook Software, Senteo Response Systems for assessments, and the new SMART Document Camera.

Barbara Mutch
Miramichi Valley High School, New Brunswick, Canada
Manchester Ballroom C (Hyatt)

## 548

## The SAT in a Flat World

(9-12) Session
How does the SAT mathematics test relate to a dynamically changing world? How can the SAT skills insight help students improve their skills and reach their goals in college and beyond? How does the SAT prepare students to be flexible problem solvers and leaders in the workforce? Come hear the answers to these questions and more.
Robin O'Callaghan
College Board, New York, New York
Andrew Schwartz
College Board, New York, New York
Salon 3 (Marriott)

## 549

## Creating and Using Guided Discovery Lessons

(9-12) Session
Participants will learn how to create, find, adapt, and use guided discovery lessons. These lessons offer students unique opportunities to become "archeologists on a mathematical dig" by sequentially uncovering layers of mathematical information one step at a time. Guided discovery lessons can be customized to fit the needs of all students.

## Richard J. Sgroi

Fox Lane High School, Bedford, New York
San Diego Ballroom B (Marriott)

## 550

## Issues of the Transition from High School to College Mathematics <br> (9-12, Higher Education) Session

This talk will focus on what we know, what we don't know, and what we need to know about the transition from high school to college mathematics, with a description of what the Mathematical Association of America is doing about these issues.

## David Bressoud

Macalester College, Saint Paul, Minnesota
Manchester Ballroom D (Hyatt)

## 551

Integrating Math Study Skills into Developmental Math Classes

## (Higher Education) Session

Do your developmental math students have even a clue about study skills needed for college success? Do they know that there are specific strategies they can use to become successful in mathematics? Learn about worksheets and activities that are designed to help develop effective study skills using very little class time.

Lynn M. Marecek
Santa Ana College, California
MaryAnne Anthony
Santa Ana College, California
6 A (Convention Center)

## 552 <br> Don't We Always Ask Good Questions? Don't We? Don't We?

## (Preservice and In-Service) Session

Questioning is probably the single most important instructional strategy that we use everyday, and too often it is the single most ignored strategy in our planning. In a lively, interactive presentation, participants will consider the do's and don'ts of effective questioning.

James J. Clayton
Saint Peter's College, Jersey City, New Jersey
Marina G (Marriott)

## 553

## Developing Number Sense with Technology-Based Experiments: Reflections on Classroom Practice in Preservice Education <br> (Preservice and In-Service) Session

This session will share inquiry-based lab activities designed to develop number sense in preservice elementary school teachers. Qualitative data collected from the preservice teachers suggests that teacher candidates developed greater number sense as a result of their participation in these classroom activities.

## Irina Lyublinskaya

City University of New York-College of Staten Island Judit Kerekes
City University of New York-College of Staten Island 6 E (Convention Center)

## Come, Connect, Communicate

## Curriculum Focal Points

Meet with educators who share your interests in curriculum focal points to discuss how we might improve the teaching and learning of mathematics. This colloquium provides an opportunity to network and establish relationships that can continue beyond the conference as a resource for your professional growth.

Carlsbad (Marriott)

## Come, Connect, Communicate English Language Learners

Meet with educators who share your interests in english language learners to discuss how we might improve the teaching and learning of mathematics. This colloquium provides an opportunity to network and establish relationships that can continue beyond the conference as a resource for your professional growth.

Del Mar (Marriott)

## 1:00 p.m.-2:00 p.m.

## CW 554

## Math-U-See: Making a Difference in Special Education!

(General Interest) Exhibitor Workshop
Math-U-See's unique approach has shown students' 100 percent improvement three years in a row in the Albuquerque Public Schools. Come see how we can help you to "close the gap" in this dynamic, multi-sensory exhibitor workshop that will clearly demonstrate the Math-U-See difference!

Math-U-See<br>Math-U-See, Fallbrook, California

1 A (Convention Center)

## eW 555

## Math Innovations: A New Middle Grades Mathematics Program

## (6-8) Exhibitor Workshop

Developed using Curriculum Focal Points, Math Innovations encourages students to think like mathematicians with focus on verbal and written communication. Concepts are developed in depth with connections across grade levels in conjunction with computational fluency.
Kendall Hunt Publishing Co.
Kendall Hunt Publishing Co., Dubuque, Iowa
1 B (Convention Center)

1:00 p.m.-2:30 p.m.

## 556

Building Number Sense with Meaningful Practice
(Pre-K-2) Gallery Workshop
Children enter school with an informal sense of number gained through natural curiosity. Let's examine how we facilitate the development of number in students as we consider what number sense is and the experiences that would enhance its acquisition.

Lisa Rogers<br>Math Solutions, Sausalito, California

Elizabeth Ballroom G (Hyatt)

## 557

## Math Intervention: Building Number Power for Struggling Students

## (Pre-K-5) Gallery Workshop

Learn how to use formative assessment and motivating games to help students increase conceptual knowledge as they engage in math discourse. The speaker will compare conceptual knowledge to procedural knowledge and analyze specific math concepts to help struggling multilingual students, special-needs students, and others who are having difficulties.

## Jennifer Taylor-Cox

Taylor-Cox Instruction, LLC, Severna Park, Maryland
5 A (Convention Center)

558

## Outsmarting Your SMART™ Board: Combining Interactive High-Tech and LowTech Solutions

## (Pre-K-5) Gallery Workshop

Explore the many ways to use interactive technology in conjunction with low-tech manipulatives as a teaching tool for whole-class lessons, differentiated instruction, individual centers, and students' assessment. No SMART Board? No problem!
Kelli Ann Cox
San Diego Jewish Academy, California
Shelly Moses
San Diego Jewish Academy, California
Manchester Ballroom E/F (Hyatt)

## 559

Are There Really Six Tens in 268? The Language of Place Value

(Pre-K-5, Higher Education, Preservice and InService) Gallery Workshop

The gallery workshop's goal is to raise participants' awareness of the importance of language in the learning of place value. In particular, participants will make connections among research on children's learning of place value, teachers' knowledge of place value, and place-value instruction for preservice teachers in methods and content courses.
Christopher Danielson
Normandale Community College, Bloomington, Minnesota
Elizabeth Ballroom F (Hyatt)

## 560

## Raising Questions, Finding Answers:

Applying Concepts of Statistics and Probability

## (Pre-K-5, Preservice and In-Service) Gallery Workshop

This gallery workshop presents five developmentally appropriate activities exploring fundamental concepts of statistics, data analysis, and probability. Activities include raising questions, gathering data, using statistical methods to create visual and mathematical representations, and developing predictions based on data analysis.

Barbara Biglan
Chatham University, Pittsburgh, Pennsylvania
Martha Hildebrandt
Chatham University, Pittsburgh, Pennsylvania
Betsy A/B/C (Hyatt)

561
Language Links: Connecting Vocabulary to Math Concepts

## (3-5) Gallery Workshop

Do your students have trouble making connections to math concepts because of the "language" involved? Students are interested in geometry, measurement, data, and so on, but can struggle with all the words. Participants will engage in activities that give students visual, concrete ways to build vocabulary associated with math concepts.
Elise Sabaski
North Kansas City Public Schools, Missouri
Charlene Steadman
North Kansas City Public Schools, Missouri
14 A (Convention Center)

## 562

## Geometry Fun with Two Guys

## (3-5) Gallery Workshop

This presentation will demonstrate geometry activities that the speakers have learned through math specialist courses at the University of Virginia. The activities will connect mathematics to the NCTM Geometry Standards as well as the five Process Standards. Participants will engage in several hands-on activities that can be used in the classroom.

## Tres Wells

Albemarle County Schools, Charlottesville, Virgnia
Justin Hose
Frederick County Public Schools, Winchester, Virginia
16 A (Convention Center)

## 563

## Got Fraction Frustration? No-Tears Strategies for Students (and Teachers)

## (3-5) Gallery Workshop

Explore engaging lessons that build fraction knowledge. Hands-on tasks will teach concepts, operations, and problem solving and use strategies such as facilitating discussions and effective questioning. Students' work and observations of the teacher and coach will reveal outcomes. Walk away with lessons that make fraction frustrations disappear.

## Elizabeth Gehron

Seminole County Public Schools, Sanford, Florida
Tiffany Garrison
Seminole County Public Schools, Sanford, Florida
17 A (Convention Center)

## 564

## Math Activities for the Special Student in the Regular Classroom <br> (3-5) Gallery Workshop

Are you having difficulty teaching computation to your students with special needs? Using the NCTM Math Computation Standard, you will be actively involved with games and activities that develop concepts, then practice these concepts and apply them to solve problems.
Shirley H. Bradsby
Jefferson County Public Schools, Lakewood, Colorado
Douglas Pavilion C (Hyatt)

## 565

## Math and Literature: A Joint Effort for Success

(3-5, Preservice and In-Service) Gallery Workshop
Understanding math concepts begins with children being actively engaged. Literature helps link math concepts through real-world applications. Together, success is achieved. Experience the math and literature connection by participating in hands-on activities that are motivating, simple, and relevant.

Sharon Huber<br>Chesapeake Public Schools, Virginia<br>Carolyn Belson<br>Retired, Chesapeake Public Schools, Virginia

San Diego Ballroom C (Marriott)

## - NA <br> 566

## Fractions, Ratios and Patterns: Helping

 Elementary School Students Get Ready for Algebra(3-5, Preservice and In-Service) Gallery Workshop
The core concepts and skills students learn in elementary school set the stage for success in algebra. Learn how to teach the important concepts and skills that support future success in algebra.

## Joseph Zilliox

University of Hawaii, Honolulu

## Eomailani Bettencourt

University of Hawaii, Manoa, Honolulu
9 (Convention Center)

567

## Building Connections through Problem Solving

## (3-8) Gallery Workshop

Successful problem solvers draw on past experiences and apply their knowledge to new situations. The speakers will share strategies for using problems to help students (1) understand the interconnectedness of mathematical ideas, (2) recognize and take advantage of prior learning, and (3) forge new connections to help make sense of challenges.

Claire Mead
The Math Forum @ Drexel, Philadelphia, Pennsylvania
Manchester Ballroom I (Hyatt)

## 568

Fantastic Folding Feats

## (3-8) Gallery Workshop

In this gallery workshop, participants create familiar twodimensional shapes by folding metric paper. The simple steps yield some captivating patterns and designs. A truly fantastic way to represent and examine two-dimensional shapes and their properties.

Allan Turton<br>Origo Education, Brisbane, Queensland, Australia<br>Calvin Irons

Queensland University of Technology, Brisbane, Australia
Marina F (Marriott)

## 569

## It's Not in the Textbook: Now What? Hands-On, Discrete Mathematics in the

 Middle School
## (3-8) Gallery Workshop

Join the speakers for some hands-on examples in discrete math! Activities on vertex edge maps, four-color theorem, origami, combinations, and more can be applied right away in the classroom and adapted easily to multiple ages and grade levels. You will leave knowing how to get your kids excited about problem solving!

## Alanna Webb

Dysart Unified School District, Surprise, Arizona
Ashley Hinsberg
Dysart Unified School District, Surprise, Arizona

## 570

## Lets Be Rational: Making Sense of Fractions, Decimals, and Integers <br> (6-8) Gallery Workshop

Middle school students struggle to understand fractions, decimals, and integers. This gallery workshop will teach new approaches to help students make sense of these topics. You will explore activities and games that build understanding and learn some new computational algorithms that will help students avoid errors.

Suzanne H. Chapin
Boston University, Massachusetts
8 (Convention Center)

## 571

F Percents without Proportions
(6-8) Gallery Workshop
Participants will try fun, easy-to-implement activities in which students learn to calculate percents using multiples, graphic organizers, and logic. The activities are perfect for improving estimation skills, number sense, and operation sense and for English language learners and special-education students.

## Susan Mercer

Santa Ana Unified School District, California
Manchester Ballroom A (Hyatt)

## 572

Exploring Integers: Relevant Applications,

Strategies
(6-8) Gallery Workshop
Explore applications of integers, make connections in multiple domains, explore students' misconceptions and strategies, and enhance pedagogical and content knowledge to improve students' conceptual understanding, which leads to flexibility when applying that knowledge to new situations.

## Sarah Jane Harris

University of Texas at Austin
Salon 5 (Marriott)

> Join or renew your membership at the NCTM Member Showcase and receive a free t-shirt!

## 573

## Measurement for All

## (6-12) Gallery Workshop

Ever wonder how to develop measurement concepts for all students? Making a ruler and a trundle wheel will help extend linear measurement to area concepts while providing context for students struggling to make connections. Experience activities just as students do in our transition to high school math camp.

Judith L. Carlin
Nikki Rowe High School, McAllen, Texas
Faynna Guerrero
Cathey Middle School, McAllen, Texas
Felipe Santiago Rico
Nikki Rowe High School, McAllen, Texas
Marina D (Marriott)

## 574

## I Get It! Developing Linear Concepts Using Clever, Meaningful Tasks <br> (6-12) Gallery Workshop

Participants will be actively engaged in hands-n activities that will enhance students' understanding of linear functions and rate of change. The activities will focus on multiple representations of linear functions, developing an understanding of slope, and real-world applications.

## Kristy Marie Thompson

Muncie Community Schools, Indiana

## Katie Marie Metz

Muncie Community Schools, Indiana

## Gloria Frasier

Muncie Community Schools, Indiana

## Rollin Ty Gill

Muncie Community Schools, Indiana
San Diego Ballroom A (Marriott)

## 575

## Making Sense of Algebra

## (6-12) Gallery Workshop

This presentation will discuss the role that algebra currently plays in schools and explore ways of teaching algebra with a focus on increasing algebraic sense making in the classroom. Participants will engage in student-centered algebra activities, examine their own conceptualization of algebra, and reflect on the needs of their students.

## Jill Newton

Purdue University, West Lafayette, Indiana
Rachael Kenney
Purdue University, West Lafayette, Indiana
Lindsay M. Umbeck
Purdue University, West Lafayette, Indiana
Douglas Pavilion A (Hyatt)

## 576

## Tennis Balls, Lines, and Geometric Transformations

(6-12, Preservice and In-Service) Gallery Workshop

Students roll a wet tennis ball across a horizontal sheet of easel grid paper then investigate the characteristics of the line left by the path of the wet ball. Their exploration leads from traditional algebraic concepts to making connections to ideas in measurement, coordinate geometry, and transformational geometry.

## Kathleen Mittag

University of Texas at San Antonio
Salon 6 (Marriott)

## 577

## Lights! Logs! And Lines! <br> (9-12) Gallery Workshop

Light intensity is an illuminating context for studying logarithms. Come gather light-intensity data and see how this exploration connects to logarithmic transformation and linear regression, while teaching basic spreadsheet skills as learners determine and justify a best-fit model. Bring a laptop with battery power. Other technology will be provided.

## Janice L. Krouse

Illinois Mathematics and Science Academy, Aurora
15 A (Convention Center)

578

## Errors, Mishaps, and Misconceptions: Understanding Quadratic Functions

(9-12) Gallery Workshop
Connect theory to practice by investigating quadratic functions and students' common errors. Analyze students' work, integrate technology, and investigate methods that will make this topic accessible for all students and enable them to move beyond rote procedures to connections between the symbolic and graphical forms of quadratics.

## Karen L. Terrell

Boston College, Chestnut Hill, Massachusetts
Lillie R. Albert
Boston College, Chestnut Hill, Massachusetts
3 (Convention Center)

579
Nspiring ${ }^{\text {TM }}$ Students: How New Technology Changes Instruction

## (9-12) Gallery Workshop

The new TI-Nspire has changed the speaker's lessons from direct instruction to interactive, exploratory, small-group activities that promote students' mathematical thinking and reasoning. Participants will complete student activities focusing on Algebra 1, geometry, and Algebra 2. No previous technology experience required.

Kimberley Ann Thomas
Valley Vista High School, Surprise, Arizona
Manchester Ballroom G (Hyatt)

## 580

The Matrix: Applying Matrices to Plant Life
Histories and Conservation
(9-12, Higher Education) Gallery Workshop
Discover practical applications of scientific concepts in the math classroom. Learn how to apply matrices to ecology and evolutionary biology. Through the use of a simple matrix population-growth model, using a system of linear equations, teachers can explore the evolution of different plant-life histories.

Alberto Macias-Duarte
iPlant Collaborative-Tucson, Arizona
Lisa Howells
iPlant Collaborative-Tucson, Arizona

## 581

## The First Ten Minutes of Class Can Ensure Students' Success!

## (9-12, Preservice and In-Service) Gallery Workshop

Use the beginning of class to assess each student's readiness for the lesson. Learn how to develop an "opener" for any lesson, techniques to collect and review the "opener", ideas for using this information to structure your lesson, and materials to meet each student's needs in a typical classroom. All levels of technology will be used.

Allan Bellman<br>University of California, Davis<br>Katie Allard<br>Canyon Crest High School, San Diego, California

Elizabeth Ballroom B (Hyatt)

## 582



## NCTM Business Meeting

(General Interest) Session
This session will provide a summary of the past year's significant accomplishments and an overview of NCTM's current and future strategic directions.

## Kichoon Yang

Executive Director, National Council of Teachers of Mathematics, Reston, Virginia

5 B (Convention Center)

## 583

## M. C. Escher Took Islamic Art to Infinity,

 and So Can You!
## (General Interest) Session

Escher used tessellations from Islamic art as a basis for intriguing transformational masterpieces. Learn how to construct triangular and square grids, recognize patterns, arrange stars, use a "nibbling" technique to create designs, and see Adobe Photoshop-enhanced images. Handouts, Powerpoint, and Photoshop instructions will be available.

## Carol D. Desoe

Scarsdale High School, New York
Douglas Pavilion B (Hyatt)

## 584

## Creating a Curriculum Map: The GPS for Effective Curriculum Implementation and Assessment

## (General Interest) Session

This session will share strategies and procedures for compacting curriculum, using available resources, making connec- tions, capitalizing on prior knowledge, building students' retention of big ideas in mathematics, and "recalculating" for school interruptions. This interactive session will include a comprehensive handout with sample maps.

## Joan Josephine Vas

Kean University, Union, New Jersey
Manchester Ballroom B (Hyatt)

## 585

## Research Insights into Mathematics Instruction for Females

## (General Interest) Research Session

## Women and Mathematics Education presentation

Research-based instructional methods that support and encourage females in mathematics will be presented with attention to how other social identities-especially race, ethnicity, and social class-intersect with gender. The presentation will incorporate audience discussion, and resources will be provided.
Lynda R. Wiest
University of Nevada, Reno
Rebecca McGraw
University of Arizona, Tucson
15 B (Convention Center)

## 586

## Teaching and Learning Mathematics: Translating Research to the Classroom

## (General Interest) Session

Participants will learn what research tells us about important questions and issues related to mathematics teaching and learning posed by grades pre- $\mathrm{K}-12$ teachers and administrators. The presenters will use information gleaned from the Second Handbook of Research on Mathematics Teaching and Learning.
Frank K. Lester
Indiana University Bloomington

## Diana V. Lambdin

Board of Directors, National Council of Teachers of Mathematics; Indiana University Bloomington

6 E (Convention Center)

## 587

## Capitalizing on Connections: Place Value Concepts in Real-World Contexts

## (Pre-K-2) Session

Learn how to use real-world contexts to support development of place value concepts. A framework for designing contextualized problems that encourage base-ten thinking will be shared. Emphasis will be given to examining students' work samples and discussing how children's problem solutions can be used to promote base-ten thinking.

## Wendy Bray

Rollins College, Winter Park, Florida
10 (Convention Center)

## 588

## Unlocking Story Problems without Key Words

## (Pre-K-2) Session

Learn how to use the context a story problem to build conceptual understanding of operations without using "key words." Through video and students' work samples, see how students make sense of stories, use variables, and represent and connect the action to mathematical operations.

## Maria DaSilva

University of Hawaii, Honolulu
Hannah Slovin
University of Hawaii, Honolulu
Linda Venenciano
University of Hawaii, Honolulu
11 B (Convention Center)

## 589

## Kinesthetic Exploration of Number Using a 100-Square Floor Grid

## (Pre-K-2) Session

This is a highly interactive session that will introduce teachers to the numerous and creative ways of teaching children to explore number physically on a large, 100 -square floor grid. Teachers will experience fun, foolproof strategies for calendar work, number patterns, greater than, less than, and basic addition and subtraction operations.

## Wendy Ellen Hill

Retired, Huntsville, Ontario, Canada 6 A (Convention Center)

## 590

## Math Room Time

(Pre-K-2) Session
A math room, designed around math recovery philosophy, strongly emphasizes assessment. All students grades K-2 will join the math room for 20 minutes. The room is divided into learning centers with one technology center that consists of a SMART Table, SMART Board, and computers. The SMART Table allows teachers to customize lessons.

## Jaime Lodge

Chester Grade School, Illinois
Douglas Pavilion D (Hyatt)

591<br>Problem Posers Create Concepts in Context (Pre-K-2, Preservice and In-Service) Session<br>When children create their own problems from their own experience, it becomes easy to assess what concepts they have learned-often more complex than their teacher expects! See examples of problems developed by young children who were helped by "Sylvester the Cat."<br>Kate Le Maistre<br>McGill University, Montreal, Quebec, Canada

Elizabeth Ballroom H (Hyatt)

## 592

## Geometry Is More than Squares and Triangles <br> (Pre-K-8) Session

What does geometric reasoning look like in the elementary grades, and how can we help our students develop reasoning abilities that move beyond naming geometric figures? A framework for understanding the development of geometric reasoning will be examined, focusing on hands-on classroom activities for developing geometric reasoning.

Tom Fox
University of Houston-Clear Lake, Texas
4 (Convention Center)


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## 593

## Does Singapore Mathematics (SM) <br> Enhance Students' Learning in the United States?

## (Pre-K-8) Session

Many teachers want to use SM with their students, but they have been unable to provide data on its effectiveness in the United States. The speakers will report results of a longitudinal study of SM implementation, offer examples of concepts students learn, and offer ways in which all students can learn math to high levels.

## Richard Askey

Retired, University of Wisconsin-Madison

## Madge Goldman

Gabriella and Paul Rosenbaum Foundation, Bryn Mawr, Pennsylvania

## Patsy Wang-Iverson

Gabriella and Paul Rosenbaum Foundation, Stockton, New Jersey

## Ban-Har Yeap

Nanyang Technological University, Singapore

## Marian Palumbo

Bernards Township Public Schools, Basking Ridge, New Jersey

6 F (Convention Center)

## 594 <br> Meaningful Multiplication: Visualizations and Independent, Task-Time Activities

## (3-5) Session

Create an environment involving all students in meaningful multiplication activities. Ensure that students make sense of multiplication before memorizing abstract facts. Provide a variety of tools to assess students' understanding and to challenge students to think by combining problem solving with computational practice.

## Marcy Cook

Consultant, Balboa Island, California
20 D (Convention Center)

## 595

## Helping Students Understand Fractions by Making Connections

## (3-5) Session

Do your students struggle to understand fractions? Are you looking for new ideas to support student learning? In this session, you will gain insight on how to support student learning by examining connections between math content, student thinking, assessment and curricula.

## Teruni Lamberg

University of Nevada, Reno

596

## Build an Understanding of Fractions

(3-5) Session
In the same way students develop an understanding of whole numbers, they need to develop an understanding of fractions. Explore ways to develop that understanding using linear and area models. Connect linear models to a number line to see fractions as numbers. Apply conceptual understanding to fraction addition and subtraction.

## Jaine Kopp

Bay Area Mathematics Project, Berkeley, California
Marina G (Marriott)

## 597 <br> Combining Math and Literacy: Using Picture Books to Teach Content and Reading

(3-5) Session
Children's literature will be highlighted in this presentation with an emphasis on using math content picture books to teach reading and math simultaneously. Participants will leave the session with classroom activities and lessons that integrate literacy and math in an engaging way for students.

## Julie Marie Amador

University of Nevada, Reno
Salon 3 (Marriott)

## 598

Differentiating Mathematics Instruction and Practice for Inclusive Environments: Math Stations
(3-5, Preservice and In-Service) Session
Learn how to provide effective instruction and practice for all learners in inclusive settings using process, content, and product differentiation; learning supports; and task modifications. The speaker will illustrate and discuss examples using the concept of math stations. Ideas will be based on the instruction and practice of fraction operations.

## Jessica Heather Hunt

University of Central Florida, Orlando
Kimberly Davis
University of Central Florida, Orlando
Elizabeth Ballroom D/E (Hyatt)

## 599

## Tools to Help Teachers and School Leaders Understand Curriculum Implementation

## (3-12) Research Session

A research team will share classroom-tested, research-based tools to help practitioners identify and understand issues of curriculum implementation. Participants will examine-and leave with-lesson logs, surveys, and unit guides that capture pedagogical and mathematical storylines for grades K-12 curricula.

Steven W. Ziebarth
Western Michigan University, Kalamazoo
Nicole L. Fonger
Western Michigan University, Kalamazoo

## Alden J. Edson

Western Michigan University, Kalamazoo
Molly A/B (Hyatt)

## 600

## Spicing It Up: A Five-Step Recipe for Adding Flavor to Bland Word Problems

## (6-8) Session

Are your students tired of the application word problems given at the bottom of the textbook page? You'll leave this session with a fistful of "good" word problems that you have created. Learn five easy revision strategies that transform plain, old word problems into worthwhile mathematical tasks.
Your students will eat them up!
Carrie S. Cutler
University of Houston, Texas
20 A (Convention Center)

## 601

## Help! I Need a Fun, Hands-On Math Activity

(6-8) Session
Hands-on math activities will be presented that were used in classrooms, were adapted for a family math night, and can be easily modified for use at all grade levels. You will leave this presentation with several ideas for fun, engaging, and educational activities that you can implement right away or at your next family math night.

## Paul V. Ridgway

Encyclopaedia Britannica, Chicago, Illinois

## Sara Torpey

Linden Public Schools, New Jersey

## 602

## Using Arithmetic Sequences to Make Sense of Linear Equations

## (6-8, Preservice and In-Service) Session

The speaker will describe an approach to learning linear equations that is based on first understanding arithmetic sequences. Because students find arithmetic sequences more intuitive and easier to grasp, this approach allows them to learn not by memorizing a set of formulas but by deriving and making sense of the important ideas.

Ryota Matsuura
Boston University School of Education, Massachusetts
Manchester 1/2 (Marriott)

## 603

## Formative Assessment: A Practical Approach <br> (6-8, Preservice and In-Service) Session

In education, it seems that each day brings a new classroom practice that teachers need to embrace and implement with their students. A closer look at formative assessment may help you recognize how you are already using this important practice, as well as how you can more fully engage in and learn from it.

Nickie Rizzo
Math Solutions, Sausalito, California
San Diego Ballroom B (Marriott)

## 604

## Activities on Data Analysis and Probability Using Technology <br> (6-12) Session <br> Data analysis and probability are imperative concepts in mathematical thinking and often hard to teach and learn. A number of online activities and visual tools will be presented on data analysis and probability to be used in the middle and high school mathematics classroom.

## Gary Bitter

Arizona State University Technology-Based Learning and Research, Scottsdale

## Rusen Meylani

Arizona State University, Tempe

## Socratic Seminar: Fostering Mathematical Discourse for English Language Learners (ELLs) and All Students

## (6-12) Session

This session is aimed at helping teachers organize and facilitate Socratic seminars for ELLs in mathematics. Students will gain confidence in analyzing mathematics textbooks as well as asking and answering complex questions. The seminar is designed to give all students responsibility in maintaining equity during the discussion.

## Angela Thompson

University of California, Santa Cruz
7 B (Convention Center)

## 606 <br> Hands-On Experiences to Develop the Concepts of Variable and Function <br> (6-12) Session

Participants will learn how to use real-world phenomena to help students develop the concept of a variable as something that actually varies! Participants will also experience data streaming from common physical phenomena and learn how the streaming itself mirrors and develops the concept of function. The new HP Data Streamer will be demonstrated.

## Michael Grasse

Elk Grove High School, Elk Grove Village, Illinois

## G. T. Springer

Hewlett-Packard Company, San Diego, California
Edward A/B/C/D (Hyatt)

## 607

## Use Practical Strategies to Increase English Language Learners' (ELLs') Math Progress Dramatically <br> (6-12) Session

ELLs and other students benefit from instruction in algebra that incorporates multiple representations, frequent formative assessment, and opportunities to "talk math." The speaker will discuss ELL teaching strategies for mathematical concept and academic language development, along with classroom routines that increase engagement.

## Debra Coggins

Alliant International University, San Francisco, California
Salon $1 / 2$ (Marriott)

608

## Cultural Context and Teaching for Social Justice

(6-12) Session

## Presidents' Series presentation

Benjamin Banneker Association presentation
Teachers who use cultural relevance or social justice as a context for teaching mathematics must not underestimate the difficulty of finding appropriate examples. Using these crucial pedagogies in the mathematics classroom is not a panacea. Teachers should avoid making them routine, which may create a new form of marginalization.

## Jacqueline Leonard

Temple University, Philadelphia, Pennsylvania
16 B (Convention Center)

## 609

## Formative Assessment Tools for High School Mathematics Teachers <br> (9-12) Session

This session will describe formative assessment tools developed for high school teachers in Kentucky. The tools include mathematics content prerequisite trees, students' common misconceptions, and strategies for addressing misconceptions. The tools were developed by teams of mathematicians, mathematics educators, and teachers.

William S. Bush
University of Louisville, Kentucky
Wanda Weidemann
Western Kentucky University, Bowling Green
Gina Foletta
Northern Kentucky University, Highland Heights
Christie Perry
Morehead State University, Kentucky
14 B (Convention Center)

## 610

## Applications of Polynomial Functions (9-12) Session

Learn some real-world and mathematical-world phenomena that can be modeled by higher-degree polynomial functions. Some are exact, such as the bending of beams and sums of powers of integers. Others are empirical and involve fitting functions to data. Even complex zeros of a cubic function can be made to show up on the graph.

Paul A. Foerster
Alamo Heights High School, San Antonio, Texas
20 B/C (Convention Center)

## 611

## States Moving toward Common Core Standards

## (9-12) Session

The presenters will discuss the process used to arrive at the NGA- and CCSSO-led Common Core State Standards in mathematics and the implications for students' achievement, including equity and access, curriculum development, teacher capacity, and U.S. success.

## Laura Slover

Achieve, Washington, D.C.
6 B (Convention Center)

## 612 <br> Reasoning and Sense Making in Algebra (9-12) Session

NCTM has recognized the need to promote new discussion around high school mathematics. This session will provide participants an opportunity to discuss and engage with examples from NCTM's Reasoning and Sense Making in Algebra document.

## Karen Graham

University of New Hampshire, Durham

## AI Cuoco

Education Development Center, Inc., Newton, Massachusetts

## Gwen Zimmermann

Adlai E. Stevenson High School, Lincolnshire, Illinois
6 D (Convention Center)

## 613

## How to Make Your Classroom 24-7

## (9-12) Session

Want to discover the full capabilities of the technology in your classroom? From basic to advanced lessons to formal assessments and 24-7 access for students, watch as we demonstrate the endless possibilities of SMART Board, SMARTtview, and Blackboard. Learn how to apply this knowledge in courses ranging from Algebra 1 to AP calculus.

Sam V. Gero<br>Fairfax County Public Schools, Lorton, Virginia<br>Kate Wolling<br>Fairfax County Public Schools, Lorton, Virginia<br>Melissa Rushing<br>Fairfax County Public Schools, Lorton, Virginia

Elizabeth Ballroom A (Hyatt)

## Cool Geometry

(9-12) Session
Geometry is fundamentally different than other high school subjects, for many reasons. It can get students turned on to mathematics. The speaker will share some things that have gotten him and his students excited about geometry in the last forty years. He will share interesting problems, applications, and connections.

John Allen Benson
Evanston Township High School, Illinois
Salon 4 (Marriott)

## 615 <br> Distance Learners and the Processes of Learning Mathematics

## (9-12, Higher Education) Research Session

Research in distance learning has focused mainly on success rates, as measured by course completion, and college-level learners. This session will discuss the preliminary findings of qualitative research devoted to examining evidence of the NCTM Process Standards in distance learners at the high school level.

Jodie A. Miller
Morristown-Beard School, Morristown, New Jersey
Gregory A/B (Hyatt)

## 616

## Links to Literacy

(Higher Education, Preservice and In-Service) Session
Reading mathematically-themed children's books can help college students improve their English-language literacy and gain a better understanding of mathematical concepts. Classtested activities will be shared.

## MaryAnne Anthony

Santa Ana College, California
Manchester Ballroom H (Hyatt)

## 617

## The Activity and Impact of Elementary School Mathematics Coaches on Students' Achievement

(Higher Education, Preservice and In-Service) Session
Mathematics coaches serve as resources for content, pedagogy, and curriculum. This session will address how coaches spend their time and how those activities do and do not relate to students' achievement. Findings will be shared from a three-year, NSF-funded study that examined coaches' impact on students' achievement and teachers' beliefs.

## Patricia F. Campbell

University of Maryland, College Park
2 (Convention Center)

## 618

## Making Cultures Count in the Classroom: How to Get Started

(Preservice and In-Service) Session
TODOS: Mathematics for ALL presentation
Teachers who integrate the role of language and culture in the learning of mathematics create equitable, rigorous, and coherent instruction. Many people strive to accomplish this but do not know how to get started. Participants will learn "how-to" steps to enhance their own effectiveness as the presenters share tried and tested techniques.

## Jim Barta

TODOS: Mathematics for ALL, Salt Lake City, Utah
Susie Hakansson
California Mathematics Project, Los Angeles, California 17 B (Convention Center)

## 619

## Transforming School Culture through New Teacher Induction

(Preservice and In-Service) Session
Transform school culture from teaching in isolation to public and collaborative work through current best practices, from information-rich hiring and orientation to comprehensive mentoring and faculty rounds. By raising the level of authentic discourse about teaching and learning, schools can truly build a professional learning community.

## Reena Freedman

Gann Academy, Boston, Massachusetts
Elizabeth Ballroom C (Hyatt)

## Come, Connect, Communicate

## Core Content Standards

Meet with educators who share your interests in Core Content Standards to discuss how we might improve the teaching and learning of mathematics. This colloquium provides an opportunity to network and establish relationships that can continue beyond the conference as a resource for your professional growth.

Carlsbad (Marriott)

## Come, Connect, Communicate Differentiated Instruction

Meet with educators who share your interests in Differentiated Instruction to discuss how we might improve the teaching and learning of mathematics. This colloquium provides an opportunity to network and establish relationships that can continue beyond the conference as a resource for your professional growth.

Del Mar (Marriott)

## EW 620

## Make Sense of Numbers using Mathematical Models from Math in Context®

## (General Interest) Exhibitor Workshop

Experience realistic mathematics education and problem solving while exploring multiple number models. These models will move students to a deeper understanding of number and operations. Each participant will receive a free Number Tools ${ }^{\circledR}$ workbook.

Britannica Digital Learning
Britannica Digital Learning, Chicago, Illinois
1 A (Convention Center)

## ew 621

Project M2 and Project M3: Developing Mathematical Talent in Elementary Students

## (Pre-K-5) Exhibitor Workshop

Help your students assume the role of mathematicians as they
develop critical- and creative-thinking skills to solve real problems. Project M3 and the new Project M2 for primary students are both challenging and motivational.

## Kendall Hunt Publishing Co.

Kendall Hunt Publishing Co., Dubuque, Iowa
1 B (Convention Center)

3:00 p.m.-4:30 p.m.

## 622

## Movin' with Math: Connecting Kids, Concepts, and Kinesthetics

(Pre-K-2) Gallery Workshop
Kinesthetic activities offer variety in differentiated instruction and practice that supplements and enriches concepts being taught. This multisensory approach motivates, promotes mastery, requires few materials, and gives immediate feedback. Kinesthetic activities for important math concepts will be presented and provided.

Joquita McKibben
Houghton Mifflin Harcourt, Orlando, Florida
Marina F (Marriott)

## 623 <br> Place Value: Making Connections One Paper Clip at a Time <br> (Pre-K-2) Gallery Workshop <br> With a box of paper clips, participants will represent deep, meaningful understanding of place value and its connection to their world. Participants will use familiar objects and ordinary language to represent one of the big ideas in mathematics-place value! <br> Elizabeth Arcement <br> Iberia Parish School System, New Iberia, Louisiana

Salon 5 (Marriott)

## 624

## Math Talk: Teaching Concepts and Skills through Illustrations and Stories

## (Pre-K-2, Preservice and In-Service) Gallery Workshop

Using illustrations of nursery rhymes, fairy tales, and themes, learn how math talk can give your students interactive opportunities to practice and master early math concepts and skills in a language-based setting. Based on an approach from Singapore, math talk is a powerful way for students to create and solve math stories.

## Char Forsten

Staff Development for Educators, Peterborough, New Hampshire

Elizabeth Ballroom F (Hyatt)
625

## The Japanese Abacus, Soroban, Can Boost Mental Calculation Skills

(Pre-K-5) Gallery Workshop
Join us as the presenter demonstrates how the soroban works and how it is used. Soroban-trained students are capable of performing mental calculation-addition, subtraction, multiplication, and division-by visualizing soroban beads in their mind.

## Hiroo Kodama

Tomoe MI Academy, Shinjuku-ku, Tokyo, Japan
Manchester Ballroom I (Hyatt)

## 626

## Stop! Re-evaluate! I Thought You Understood Fractions

## (3-5) Gallery Workshop

This presentation will focus on a lesson study presented to fourth- and fifth-grade students. Participants will take active part in the lesson, which incorporates the understanding of three different fraction models, and examine the different error patterns in the students' work.

## Laura Gray

Norfolk Public Schools, Virginia
11 A (Convention Center)

## 627

## LCC: Links between Concepts and Content (3-5) Gallery Workshop

Participants will experience hands-on activities that highlight natural links to concepts and content in the mathematics of grades 3-5. The activities will enhance the connections to real life and to other disciplines, such as language arts, science, and technology.

## Maria Diamantis

Southern Connecticut State University, New Haven
15 A (Convention Center)

## 628 <br> Mathematics Notebooking That Works: Reaching All Learners

## (3-5) Gallery Workshop

During this presentation, participants will examine and actively explore using notebooking as a tool to increase students' mathematical thinking and understanding while meeting individual needs. Notebook entry types and strategies for use will be highlighted as organizational elements to support student learning.

## Mary Knuck

Arizona Department of Education, Phoenix
3 (Convention Center)

## 629 <br> Making Connections: Problems from Singapore Classrooms <br> (3-5) Gallery Workshop

Come with a sharp pencil and experience solving mathematics problems used in Singapore schools. Some of these problems help students use context to learn content. Others help students link different content areas. Learn how teachers can help students make all sorts of connections in solving problems. Go home with a bunch of problems.
Ban-Har Yeap
Nanyang Technological University, Singapore
Douglas Pavilion A (Hyatt)

## 630

## Technologically Challenged But Still Using a SMART ${ }^{\text {TM }}$ Board

## (3-5) Gallery Workshop

Educators of different technological skill levels will learn to use a SMART Board as a tool for linking concepts and context. Learn the tricks of this technology, learn how to develop instructional activities, and be able to edit previously created lessons. Participants will leave with multiple ideas and resources to make the connections.

Jan A. Puls<br>Norman Public Schools, Oklahoma<br>Johnnie Keel<br>Norman Public Schools, Oklahoma

Manchester Ballroom E/F (Hyatt)

## 631

## What's the Big Idea? Connecting Fractions, Decimals, and Percents

## (3-5) Gallery Workshop

The presenter's hands-on gallery workshop will show participants how to use manipulatives and pictorial representations to acquire strategies that can be used to help students understand the "big ideas" about fractions, decimals, and percents and how the three are all interconnected.

## Carolyn Doyle

Richmond City Public Schools, Virginia
San Diego Ballroom A (Marriott)

## 632

## Using Music Composition to Teach Math

 (3-5, Preservice and In-Service) Gallery WorkshopColor bars will be used to represent music scales, and the numbers of bars to represent notes' durations. Combinations of color bars will be used to represent chords. Based on a typical pop music chord sequence, students will compose music by choosing colors. Statistics tables and graphs will be created based on students' composition notes.

## Song An

Texas A\&M University, College Station
Shuhua An
California State University, Long Beach
Salon 6 (Marriott)

## 633

## Rational Number Project: Fraction Operations and Initial Decimal Ideas

## (3-8) Gallery Workshop

Latest curriculum project from the NSF-funded Rational Number Project (RNP) will be shared. Twenty-eight lessons are available at no cost on the RNP Web site. The presentation provides participants opportunity to explore sample lessons, view video clips of actual lessons, and analyze students' work.

Terry Wyberg<br>University of Minnesota-Twin Cities<br>Kathleen Cramer<br>University of Minnesota-Twin Cities<br>\section*{Seth Leavitt}<br>Minneapolis Public Schools, Minnesota

634

## Surface Area and Volume: Help! I Can't Memorize All These Formulas

(3-8, Preservice and In-Service) Gallery Workshop
Participants will actively engage in hands-on activities using tape measures, square tiles, cubic units, and even sand in order to develop a conceptual understanding of perimeter, area, and volume formulas. These activities will begin with rectangles, triangles, parallelograms, trapezoids, and circles and will end with prisms and pyramids.

Joy W. Darley
Georgia Southern University, Statesboro
Barbara B. Leapard
Eastern Michigan University, Ypsilanti
17 A (Convention Center)

## 635

## ABC's of Problem Solving: An Approach to Building Mathematical Knowledge (3-8, Preservice and In-Service) Gallery Workshop

Experience an approach to problem solving that builds knowledge and confidence in grades $\mathrm{K}-12$ students and preservice teachers alike, and share in the the joys, frustrations, breakthroughs, and growth of attempting, solving, and presenting problems. Materials and an overview of a preservice capstone course based on this model will be provided.

## Janet Nichols

Colorado State University-Pueblo
Janet Heine Barnett
Colorado State University-Pueblo
Marina D (Marriott)

## 636

## Math Nights That Work

## (6-8) Gallery Workshop

Learn the secrets to success in planning and implementing math activity nights at your school. You should be prepared to participate in actual math night activities, including a warmup, a group game, and a featured activity. You will leave with a CD full of activities you can use or modify.

## Elizabeth Warren

Estacada Junior High School, Oregon

## Sally Wood

Estacada Junior High School, Oregon
Julie Norrander
Estacada Junior High School, Oregon

## 637

## All Aboard for Function Junction

## (6-8) Gallery Workshop

Pack your thinking bags, get your brain ticket, and travel from station to station where you will explore functions in a variety of ways. Your travels will also take you on a tour where literature is integrated into the study of the different types of functions. All aboard!

## Emily Combs

Clinton Middle School, Missouri
Ann McCoy
University of Central Missouri, Warrensburg
Joann Barnett
Ozark Upper Elementary School, Missouri
Melody Ollison
University of Central Missouri, Warrensburg
Ashley Burns
Park Hill Schools, Park Hill, Missouri
Jami Smith
Archie Schools, Archie, Missouri
Elizabeth Ballroom G (Hyatt)

## 638

NASA Smart Skies: Applying Math to Air Traffic Control

## (6-8) Gallery Workshop

Apply proportional reasoning and distance-rate-time relationships to explore flight problems through an experiment, a graphing tool, and an air traffic control simulator. Use multiple representations to connect equations, their graphs, and real-world scenarios. All materials are free online.

## Gregory Condon

NASA Ames, Moffett Field, California
Miriam Landesman
NASA Ames, Moffett Field, California
Manchester Ballroom G (Hyatt)

## 639

## Mathematics through Paper Folding

## (6-8) Gallery Workshop

Participants will join in an interactive, hands-on experience folding waxed and regular paper to illustrate geometric concepts. The presentation will begin with how to fold the basic constructions and then apply paper folding to lines, angles, squares, circles, triangles, parabola, and more. This will be an active mathematical experience.

## Jim Fulmer

University of Arkansas at Little Rock
Suzanne Mitchell
Arkansas State University, Jonesboro
Marina E (Marriott)

## 640

## People Count: Math and Demography in the Year of the Census

## (6-8) Gallery Workshop

In this census year, discover timely and innovative hands-on activities for drawing connections between math and social studies. Students will learn about U.S. demographic trends past and present while honing their skills in algebra, data analysis, problem solving, measurement. and more. A free CD-ROM of activities will be available.

## Sara Jenkins

Population Connection, Washington, D.C.
San Diego Ballroom C (Marriott)

## 641

Written Formative Feedback: Building Problem Solving and Mathematical Understanding

## (6-12) Gallery Workshop

Participants will explore a guide developed by the Northwest Regional Educational Laboratory to help teachers make constructive written comments. Opportunities will be provided to examine follow-up instructional activities using written feedback to advance students' problem-solving performance and mathematical understanding.

## Jessica Strowbridge Cohen

University of Idaho, Moscow

## Edith S. Gummer

Northwest Regional Educational Laboratory, Portland, Oregon

## Claire Gates

Northwest Regional Educational Laboratory, Portland, Oregon

## Traci Fantz

Northwest Regional Educational Laboratory, Portland, Oregon
Sarah Enoch
Portland State University, Oregon
Karen Marrongelle
Portland State University, Oregon
Betsy A/B/C (Hyatt)

## 642

## Reaching the "I Don't Know How to Teach" Students in Algebra <br> (6-12) Gallery Workshop <br> Participants will use assessment, hands-on activities with manipulatives, and Marzano's research-based strategies to prepare middle school students for success in algebra. Differentiated instructional activities with fractions, geometry, and integers for all students will be demonstrated.

## Amy Johnson

Math Teachers Press, Inc., Minneapolis, Minnesota

## 643

## Helping All Algebra Students Recognize That They Are Smart <br> (6-12) Gallery Workshop

Participate in sample activities modeling a new approach for all students to learn rich mathematics. Teachers will receive practical ideas, whereas administrators will learn about strategies successful with heterogeneous groups. These ideas allow students to connect their algebra understanding with real-life applications.

## Carol Cho

Alhambra High School, Martinez, California
Manchester Ballroom A (Hyatt)

## 644

## Patterns of Change

## (6-12, Higher Education, Preservice and In-Service) Gallery Workshop

Change-one of the big ideas in mathematics. Participants will engage in tasks to identify, describe, and analyze patterns of change mathematically using a variety of tools, including combinatorics, Pascal's triangle, and statistical methods. Understanding and predicting change changes our view of mathematics!

## Timothy Hendrix

Meredith College, Raleigh, North Carolina
5 A (Convention Center)
*N 645

## Teaching Algebra through Building the Right Tasks

(6-12, Preservice and In-Service) Gallery Workshop
How you approach algebra affects how your students learn it. Learn how to develop and design tasks that engage students and apply the full range of processes - problem solving, reasoning, connections, communications, and more.

## Barbara Dougherty

Board of Directors, National Council of Teachers of Mathematics; Iowa State University, Ames

## 646

## Connecting Geometry to Algebra,

 Probability, and Logic
## (9-12) Gallery Workshop

This presentation will investigate math problems that connects geometry with other mathematical topics. Specifically, we will connect geometry to algebra, probability, and logic. Pictures, tables, and logic puzzles are used to solve mathematical problems.

## Nicole Williams

Winona State University, Minnesota
14 A (Convention Center)

647

## Projects and Precalculus: Putting Concepts in Context

(9-12) Gallery Workshop
You will explore alternative assessments that use precalculus concepts in a real-world context. Graphing calculators will link linear and exponential regression with the Olympics, sine curves with tide changes, and equations of functions with art. You will leave with examples and rubrics, ready to implement these projects immediately.

## Ingrid Williams

Shawnee High School, Medford, New Jersey
Amy Gersbach
Seneca High School, Tabernacle, New Jersey
16 A (Convention Center)


3:30 p.m.-4:30 p.m.

Sense Making in Mathematics: Where Have We Been, and Where Would We Like to Go? (General Interest) Session
Throughout our history, there have been a number of calls for students' sense making in mathematics. This session will remind us of some of those past pleas and then discuss the Council's current goals for sense making for all our students.

## J. Michael Shaughnessy

President-Elect, National Council of Teachers of Mathematics; Portland State University, Oregon

20 B/C (Convention Center)

## 649

## Becoming an Inspirational Teacher:

 Creating a Context for Commitment(General Interest) Session
Presidents' Series presentation
This highly motivational, humorous session will examine research on students' motivation and commitment to learning. Participants will discuss and discover six specific behaviors of teachers that make the undesirable desirable and motivate students to maximize their effort and commitment to learn.

## Timothy D. Kanold

National Council of Supervisors of Mathematics, Denver, Colorado

20 D (Convention Center)

## 650



## Emerging Strategies in Strengthening Math Education for All Students

## (General Interest) Session

Districts have responded to higher mathematics expectations for all students with new approaches to such difficult problems as serving children with special learning needs, academic language development, and motivating students to persist in challenging courses. Learn of new work to solve urgent problems of educational practice for all students.
Philip "Uri" Treisman is a professor of mathematics and public affairs at the University of Texas and is also the executive director of the Charles A. Dana Center. He chairs the steering committee of the Urban Mathematics Leadership Network, a coalition that works to improve grades pre-K-12 mathematics teaching and learning. For his work on nurturing minority students' high achievement in mathematics, he was named a MacArthur Fellow for 1992-1997.

## Uri Treisman

Charles A. Dana Center, University of Texas at Austin 6 B (Convention Center)

## 651

## The Five "Secrets" to Effective Instruction

(General Interest) Session
In this humorous, heart-warming talk, the speaker-diagnosed once as having "neurological impairment" and no academic potential, but who later earned a Ph.D. in mathematics from MIT-will give five research-based, easy-to-apply yet powerful techniques for improving teaching effectiveness and inspiring teachers to help students of all ages achieve success.

## Frank Y. Wang

Wang Education, LLC, Plano, Texas
Elizabeth Ballroom D/E (Hyatt)

## 652

## Coaching Strategies That Address Students' Learning

## (General Interest) Session

What coaching work will increase the probability that students will be successful? Learn the structure of different coaching models and the advantages of each model. Hear the perspectives from a teacher and a principal about how focusing on formative assessment principles in conjunction with coaching has made a difference in their school.

## Janis L. Freckmann

Milwaukee Public Schools, Wisconsin

## Connie Laughlin

Milwaukee Public Schools, Wisconsin
Susan Chiemilinski
Wauwatosa Public Schools, Wisconsin
Manchester Ballroom H (Hyatt)

## 653 <br> Better Research, Better Schools: Connecting Quality Research to the Classroom

## (General Interest) Session

The What Works Clearinghouse (WWC) offers guidance on the effectiveness of interventions in mathematics instruction. WWC researchers will discuss what marks quality research, detail how educators use research effectively, highlight useful products, and open a discussion on strengthening communication between educators and researchers.

## Mark Dynarski

What Works Clearinghouse, Washington, D.C.

## Roberto Agodini

Mathematica, Princeton, New Jersey
San Diego Ballroom B (Marriott)

## 654

## Young Children and the Voice of Reason

 (Pre-K-2) SessionThis session will provide resources to assist teachers in presenting activities that require young children to reason and prove. In each activity, children will have to give a rationale to support their answer. Manipulative activities using teddy bears, ladybugs and grasshoppers, puppy dogs, and snakes will be presented.

## Sue Brown

University of Houston-Clear Lake, Texas
Elizabeth Ballroom H (Hyatt)

## 655

## Finding Math in the Museum

(Pre-K-5) Session
Come learn how children can be involved in mathematical thinking during visits to informal learning sites such as museums and zoos. Activities will be shared that will provide participants with the resources to include more mathematical experiences during field trips.

## Sandi Cooper

Baylor University, Waco, Texas
Jordan Sandefur
Baylor University, Waco, Texas
7 B (Convention Center)

## 656 <br> No Paper, No Pencil: No Problem! (Pre-K-5) Session

Participate in math lessons that connect hands-on activities to pictorial and abstract representations through the use of pocket charts and miniature whiteboards. Classroom video clips will be used to show how to enhance learning by increasing students' engagement during guided practice activities.

## Judy Diane Devens-Seligman

Hacienda-La Puente Unified School District, Valinda, California

## 657

## Lesson Study: Developing Meaningful Mathematical Ideas in the Elementary School Classroom

## (Pre-K-5) Session

The lesson study cycle helps teachers evaluate their current instructional best practices and the practices' impact on students' understanding. Video clips, examples of students' work, and activities that build conceptual understanding will be shared.

## Susan Call

Annandale Terrace Elementary School, Annandale, Virginia 4 (Convention Center)

## 658

## Meeting the Needs of All Students through Differentiated Mathematics Instruction (3-5) Session

All teachers face the challenge of meeting the needs of a wide range of students. This session helps teachers understand what it means to meet students' needs through differentiation. Teachers experience a variety of approaches that help them make instructional adjustments that address how different students learn.

## Lu Ann Weynand

Math Solutions, Sausalito, California
11 B (Convention Center)

## 659

Games That Promote Students' Success in
Mathematics

## Come hear Dr. Wang deliver his talk

The Five "Secrets" to Effective Instruction (session 651) - 3:30-4:30 pm Friday, April 23, Elizabeth Ballroom D/E at the Hyatt

- Educators who have heard Dr. Wang have described his talks as inspiring, entertaining, thoughtful, thought-provoking, and full of passion. Some have written to say the talk "made the conference for them" and was the best and most useful talk at the show. Come early to get a seat !


## Visit the Wang Education booth (\# 944)

- Register at the Wang Education booth and get a free "I Love Nerds" or "Geek is Chic" pocket protector (a $\$ 3.95$ value).
- Get a free sample of FracBars, the first and only manipulative that can easily and visually illustrate fraction division as well as do everything else that other fraction manipulatives can do.
- Get a bookmark sample of Wittzle Pro, an easy-to-learn mental math game that is so addictive and fun students won't want to stop playing.
- See unique products such as the DVD-based classroom kits Beauty and Mathematics and Group Theory with Fruits, the Secrets of Mental Math book, the Whaley three-line gradebook, and the geometric laser game Khet.
(3-5) Session
Participants will experience a variety of games that actively engage all students, particularly those from diverse populations, while reinforcing math skills.The games can involve whole families in math as well as promote problem solving and reasoning and reinforce number sense. A handout will include rules and additional resources.


## Louise Vandling

Vista Unified School District, Vista, California
Molly A/B (Hyatt)

## Mathemagician and Edutainer



Packed audience at teacher conference.
"This is the best workshop in the NCTM Conference" "Best lecture here !!!"
"...zished it had been longer"
-- Talk attendee comments


## 660

## Does Math Make Sense? Switching the Light Bulb On

## (3-5, Preservice and In-Service) Session

To make math meaningful for each student, teachers must have a robust understanding of the mathematics, reliable tools to diagnose students' understanding, and strategies that provoke students' thinking. Two teachers will show how they engage every student through the use of diagnostic tasks, differentiated instruction, and focus questions.

## Christine Lyons

STEPS Professional Development, Norwell, Massachusetts
6 C (Convention Center)

## 661

## Formative Assessment: A Sensible Approach

## (3-5, Preservice and In-Service) Session

In education, it seems that each day brings a new classroom practice that teachers need to embrace and implement with their students. A closer look at formative assessment may help you recognize how you are already using this important practice, as well as how you can more fully engage in and learn from it.

## Patty Clark

Math Solutions, Sausalito, California
Manchester Ballroom B (Hyatt)

## 662

## Geometry through the Five Strands of Mathematics Proficiency

## (3-5, Preservice and In-Service) Session

This hands-on, interactive presentation will guide participants through activities and discussions for facilitating plane and solid geometry instruction through the NRC's Five Strands of Mathematics Proficiency: adaptive reasoning, strategic competence, conceptual understanding, productive disposition, and procedural fluency.

Thomasenia Lott Adams
University of Florida, Gainesville
Manchester Ballroom D (Hyatt)

663
Lessons from Singapore: Using Visual Models to Teach Algebra and Number

## (3-8) Session

Singapore's success in math education is in part a result of carefully designed lessons that help students represent and visualize mathematical relationships. These models begin with the four operations and word problems, then are connected to more complex problems and eventually algebra. This presentation will demonstrate the power of these models.

## Andy Clark

Great Source Education Group, Portland, Oregon
6 A (Convention Center)

## 664

## Number Sense and Rational Numbers: Challenges, Clarity, and Coherence <br> (3-8) Session

This session will examine issues about whole numbers and rational numbers and the lack of students' sense making with such numbers. Participants will engage in strategies, activities, and technology (including YouTube videos) that can lead to building better number and fraction sense. They will also consider issues around curricular coherence.

Eric Milou
Rowan University, Glassboro, New Jersey

## Jill Perry

Rowan University, Glassboro, New Jersey

## 16 B (Convention Center)

## 665

## Using "Strip Diagrams" to Solve Algebra Word Problems

## (3-8) Session

You will learn how to use simple drawings-" "strip diagrams"-to make sense of and solve a wide variety of word problems. These simple drawings can also be connected directly to algebraic equations and to standard algebraic techniques for solving equations. Strip diagrams are widely used in grades 3-6 in Singapore.
Sybilla Beckmann
University of Georgia, Athens
Jon R. Star
Harvard University, Cambridge, Massachusetts
Elizabeth Ballroom C (Hyatt)



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Come see a free demo!

## 666

## Intervention Strategies: The Singapore Way

## (3-8) Session

Do you have students who struggle with retaining their facts, basic computation or remembering a skill that you taught them last week? This session will provide you with valuable strategies that you can use as intervention tools to help the struggling student. These strategies come from Singapore, the world's leader in math achievement.

## Ann Elizabeth Stipek

Staff Development for Educators, Peterborough, New Hampshire

10 (Convention Center)

## 667

## Podcasting: You Can Do It, We Can Help! (3-8) Session

This session will present ways to use podcasting for teachers' professional development and capturing important classroom episodes. The speakers will describe their experience with podcasting. See how to create a podcast, view some sample podcasts, and discuss its benefits and challenges.

Eleanor Pusey
Columbus County Schools, Whiteville, North Carolina
Leslie Bellamy
Guideway Elementary School, Tabor City, North Carolina
Salon 1/2 (Marriott)

## 668

Focusing on Students' Learning
(3-8, Higher Education, Preservice and In-Service) Session
This presentation will explain a model for, and the accompanying results of, implementing the Japanese lesson study model in both preservice and in-service programs designed to examine lessons in algebra, geometry, and measurement topics of concern identified in international and national testing.

Sally A. Robison
University of Arkansas, Little Rock

669

## See Beyond What You Know: Explore Visually with Cabri® and Cabri® Elem <br> (3-8, Preservice and In-Service) Session

For students to develop algebraic and geometric understandings, they must reach beyond a static world of knowing. In Cabri environments, visually explore and link real-world experiences with reasoning and abstractions of mathematics. Topics will include reasoning, geometric objects and relations, graphing, transformations, and 2D and 3D modeling.

## Barbara Pence

San Jose State University, California

## Janet Smith

Franklin McKinley School District, San Jose, California
6 E (Convention Center)

## 670

## Laws of Exponents: Linking Concepts and Context

## (6-8) Session

Learn how to link concepts and context involving laws of exponents in and outside mathematics. Why is any number to the zero power equal to one? Why is $1 / 10$ equal to $10^{(-1)}$ ? Why is the square root of 25 equal to $25^{(1 / 2)}$ ? Learn the answer to these students' questions and more.

Estella P. De Los Santos
University of Houston-Victoria, Texas
5 B (Convention Center)

## 671

## Connecting Mathematics to the Culture of Industry <br> (6-8) Session

Students often ask, "When will I ever use this?" This session will engage participants in lessons that connect mathematics content to graphic design, industrial engineering, and construction, addressing this age-old question. Ideas for participants constructing their own contextual mathematics lesson will also be discussed.

## Desha L. Williams

Kennesaw State University, Georgia
Marina G (Marriott)

## 672

## Developing Students' Proportional Reasoning: Lessons through Research (6-8) Session

One of the primary goals of middle school mathematics classes is to help students develop proportional reasoning. This session will provide teachers will research-based suggestions for teaching concepts related to proportions. The sessions will engage teachers in active ways as they solve problems and discuss their solution strategies.

## Gwendolyn J. Johnson

University of South Florida, Tampa, Florida
Salon 4 (Marriott)

## 673

## South Dakota Counts in Middle School Mathematics

## (6-8, Higher Education) Session

South Dakota Counts is a professional development program designed to deepen middle school teachers' mathematical understanding while giving teachers a constructivist teaching approach using cognitively guided instruction. Learn about this successful project, including the activities used to teach middle school mathematics concepts through inquiry.

## Christine Lynne Larson

South Dakota State University, Brookings
Edward A/B/C/D (Hyatt)

## 674

## Everyone Can Achieve: Reaching All Your Student Population

## (6-8, Preservice and In-Service) Session

This session will focus on middle school math standards and how to adapt the grade-level standards to meet the different needs and learning styles of all the students in your classroom, including special education students.

## Ilene Foster

California State Polytechnic University, Pomona

## Erik Foster

Etiwanda School District, Hesperia, California
Douglas Pavilion B (Hyatt)

## 675

## Developing the Concept of Integers in the Context of Finance

## (6-8, Preservice and In-Service) Session

Integer concepts constitute the building blocks of algebra where students perform operations with negative numbers. Participants will receive a series of problems grounded in a finance context that support students' understanding of integer concepts and lead them to reinvent the rules for integer operations.

## Michelle Stephan

Lawton Chiles Middle School, Oviedo, Florida
Didem Akyuz
University of Central Florida, Orlando, Florida
Elizabeth Ballroom A (Hyatt)

## 676

## Getting Your Reps for a Great Algebra Workout <br> (6-12) Session

In olden times, getting in your "reps" meant doing many instances of the same type of problem. Now, we are using multiple "rep"resentations in algebra to help students understand problem solving. Dynamic problems from Algebra 1 and Algebra 2 will demonstrate how representations allow students multiple access points to real-world problems.

Edward C. Nolan
Albert Einstein High School, Kensington, Maryland
20 A (Convention Center)

## 677

## Using TI-Nspire ${ }^{\text {TM }}$ to Discover the Corner Point Principle <br> (6-12) Session <br> Participants will use TI-Nspire calculators to graph the formulation of a real-world linear programming problem. Next,

 they will learn how to use the interactive geometry tools of Nspire to discover the corner point principle. Finally, extensions to the activity and the potential of the use of Nspire to affect students' learning will be discussed.Thomas G. Edwards
Wayne State University, Detroit, Michigan

## S. Asli Ozgun-Koca

Wayne State University, Detroit, Michigan
Douglas Pavilion D (Hyatt)

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Founder of Math Solutions
April 22, 3:30-4:30 p.m.
Rusty Bresser \& Kathy Melanese Co-Authors of Supporting English Language Learners in Math Class
April 22, 12:30-1:30 P.M.

## Cathy Seeley

NCTM past president and author of Faster Isn't Smarter: Messages About Math, Teaching, and Learning in the 21st Century April 23, 2:00-3:00 p.m.


Enter to win a new Netbook and gift cards for Math Solutions resources!

## Booth 1833

## 678

## Quantitative Investigations of the Financial Crisis

## (9-12) Session

Clearly understanding the causes and significance of the current financial crisis in America requires both quantitative and financial literacy. This presentation will provide teaching ideas using data and statistics to describe the housing bubble, the loss of capitalization, global interconnectedness, the bailout, and other current economic events.

## Paul Young

Colorado Springs School, Colorado
2 (Convention Center)

## 679

## Tackling Functions: Concept, Operations, and Transformations from Multiple Perspectives

## (9-12) Session

Ready to deepen your students' understanding of functions? Learn how to approach function operations from multiple representations. We'll dive deep into function transformations with an emphasis on the use of The Geometer's Sketchpad. Prepare for light bulb moments involving inverse functions and transforming polar functions.

## Vincent LaVergne

Shawnee Mission South High School, Overland Park, Kansas
Manchester Ballroom C (Hyatt)

## 680

## Shape-Changing Transformations: Hands-On Activities That Demonstrate Linearization in Regression Modeling (9-12) Session

Using simple activities, students can collect inherently nonlinear data and carry out shape-changing transformations to linearize the data while developing regression models. Regression diagnostics will assess the fit and appropriateness of the models. Teachers' and students' materials, along with background information, will be available.

## Stephen Miller

Winchester Thurston School, Pittsburgh, Pennsylvania
Salon 3 (Marriott)

681

## Solving Optimization Problems by Using Technology

(9-12, Higher Education) Session
Providing students a visual and algebraic understanding of optimization problems by using technology is important for having a deep understanding in calculus. Explore how to use the dynamic nature of technology to illustrate optimization problems.
Sirin Coskun
University of Central Florida, Orlando
17 B (Convention Center)

## 682

## The Cube Contains All, Explains All

(9-12, Higher Education) Session
A series of models will be used to demonstrate how formulas for the volumes of every solid studied in Geometry 1-and many that are not-spring from the very shape whose name symbolizes volume: the cube. The concept will be expanded to develop formulas for volumes of new shapes, culminating in the formula for the volume of the Dynamic Tower.

Kenn L. Pendleton
GED Testing Service, Washington, D.C.
6 F (Convention Center)

## 683

## Investigating Students' Concepts of Standard Deviation

## (9-12, Higher Education) Research Session

This session will investigate rich tasks in statistics that tease out the fundamental ways students understand standard deviation. Students' artifacts and videos will be shared. After working through several problems, participants will reflect on the prototypes we have found and help discuss future directions for this research.

Alan Russell
Elon University, North Carolina
Janet Mays
Elon University, North Carolina
Amanda Ketner
Elon University, North Carolina

## 684

## Learning from African-American Teachers of African-American Students in HighStakes Testing Environments

## (9-12, Higher Education, Preservice and In-Service)

 Session
## Benjamin Banneker Association presentation

The speakers will present cases of how African-American teachers in predominately African-American classrooms foster the development of students' mathematics identities. These cases promote inquiry into the importance of understanding students' relationship to mathematics and strategies for fostering students' positive mathematics identities.

## Julius Davis

University of Maryland, College Park

## 685

## Problem Solving in Dynamic Mathematics Environments

## (9-12, Higher Education, Preservice and In-Service) Session

Dynamic learning environments afford a variety of new approaches to classic problems in school mathematics. Using conic sections, the speakers will investigate implications of formal definitions and paper-folding tasks in GeoGebra's interactive, dynamic environment, focusing on two strategiesunderstanding dependency and working backward.

## Erhan Selcuk Haciomeroglu

University of Central Florida, Orlando

## Lingguo Bu

Southern Illinois University Carbondale
Manchester 1/2 (Marriott)

## N(NB6 686

## New Teacher Celebration!

(Preservice and In-Service) Session
Celebrate the progress and possibilities. We are looking for all new and early-career teachers and students working toward entering this exciting profession. Learn a little, laugh more, meet some great folks and win wonderful prizes. Come celebrate with us. You are the future.

4 (Convention Center)

## Join us at the 2011

 NCTM Annual Meeting in Indianapolis, Indiana, April 13-16, 2011
# were what's $\rightarrow \sqrt{1}$ in mathematics education 

Jane F. Schielack and Dinah Chancellor understand that a focal-points based curriculum requires special planning. In Mathematics in Focus, $\mathbf{K}-6$ they provide math leaders and teachers strategies for instructional design that helps students achieve deeper understanding.
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Steven Leinwand gives leaders a roadmap for change that aligns with NCTM's Principles and Standards series. In Sensible Mathematics he shows how to clearly communicate what change must occur, why it has to, and what must be done to implement it.
Gr K-12 / 978-0-325-00277-4 / 144pp / \$22.00
......: In Math, Culture, and Popular Media, Michaele Chappell and Denisse Thompson offer a unique multicultural resource for teachers to incorporate popular media in engaging math investigations.

Gr. 6-8 / 978-0-325-02122-5 / $160 \mathrm{pp}+\mathrm{CD} / \$ 21.00$
Give students these 50 cool problems that connect math to the real world. In Understanding Middle School Math,
Arthur Hyde offers field-tested problems that lead to deep thinking and fun.
Gr. 6-8 / 978-0-325-01386-2 / 280pp / \$27.00

## .....: Judy Storeygard gives you instructional strategies to help

 struggling math learners to move along the path toward gradelevel competency. In My Kids Can: Making Math Accessible to All Learners, $K-5$, you'll find practical answers to difficult questions of practice. The DVD includes classroom footage and interviews with teachers who have had success using Judy's approach.Gr K-5 / 978-0-325-01724-2 / 240pp + DVD / \$27.00


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NCTM Committee Presentation

## HIGHLIGHTS

- Closing Session: Unlocking the Secrets of Happiness (Presentation 753)


## Registration Hours <br> 7:00 a.m.-10:00 a.m.

## Exhibits and <br> Cyber Café Hours <br> 9:00 a.m.-12:00 noon

## Bookstore and Member Showcase Hours <br> 8:30 a.m.-12:00 noon

## 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 conform to fire codes, it will be necessary to ask persons sitting on the floor or standing to leave the room.

## 687

## STEM: More than an Acronym?

## (General Interest) Session

Everyone is talking about STEM. Do they agree on its meaning? Is there a shared strategy on implementation? The answer to both questions is "no." Let's think of this as an opportunity, rather than a challenge. How can the mathematics education community benefit from the fact that STEM is in the forefront of many conversations?

## Linda Rosen

Former Executive Director, National Council of Teachers of Mathematics; Education and Management Innovations, Inc., Bethesda, Maryland

6 D (Convention Center)

## 688

## How to Develop Computational Skills without Drill, During Problem Solving (General Interest) Session

You can develop your students' computational skills through problem solving. You will see how this can be done in the context of excellent problems that engage students' thinking and give computational practice, at the same time. Don't believe it? Come and see.

Jerry P. Becker
Southern Illinois University Carbondale
6 F (Convention Center)

## 689

## Responsive Routines for Early Number Sense

(Pre-K-2) Session
Early number sense is at the core of making meaning in mathematics. Participants will learn ways to develop strong but quick routines that will provide students opportunities to interact with number sense ideas every day. Video clips and students' work will be shared to deepen understanding of how to be responsive to students' number-sense needs.

Jessica Shumway
Fairfax County Public Schools, Alexandria, Virginia
4 (Convention Center)

> Don't miss the Closing Session on Saturday afternoon with featured speaker Dan Buettner.

## 690

## Getting to the Heart of Measurement (When We Usually Don't)

## (Pre-K-5) Research Session

U.S. textbooks do some things well and some things poorly in helping elementary school students learn spatial measure-ment-length, area, and volume. This session will take you to the heart of the measurement process, explore students' confusions and errors, and give you tools-tasks and promptswith which your students can make sense of measurement.

## Jack Smith

Michigan State University, East Lansing
11 B (Convention Center)

## 691

## Scaffolding Math Academic Language and Literacy for English Language Learners (ELLs) <br> (Pre-K-8) Session

This session will focus on ways to develop academic content vocabulary, increase comprehension, and differentiate math instruction while addressing a variety of reading levels. Particular emphasis will include supporting the needs of ELLs in the regular literacy or content area classroom.

## Tammy Jones

National Literacy Consultant, Conway, Arkansas
14 B (Convention Center)

## 692

## Infusing Measurement in Math and Science

(3-5) Session
This session will investigate the role estimation strategies play in teaching the measurement standards. These roles will assist in developing the benchmarks for various measurement and assessing the reasonableness of the results. Attributes of measure will be discussed.

## Marti Kuntz

South Carolina Teachers of Mathematics, Charleston
7 B (Convention Center)

## 693

## Division Problem Types and Remainder Types: Context Does Strange Things!

## (3-5, Higher Education, Preservice and In-Service) Session

Participants will explore the difference between "grouping" and "sharing" division word problems and how those differences can be best used in teaching. Further, participants will inductively "discover" four types of division remainders and learn to use these types to sequence lessons and improve students' understanding.

## James E. Schwartz

Saint John Fisher College, Rochester, New York
16 B (Convention Center)

## 694

## Making Meaning through a Student-Led Math Night <br> (3-8) Session

As students plan and lead a family math night, teachers step out of the way as students step up. Learning opportunities abound throughout the planning process and during the event. Handouts include activity ideas, resources, and practical suggestions for starting a new school tradition.

## Wendy Petti

Washington International School, Washington, D.C.
2 (Convention Center)

## 695

## Equity through Group Work: Complex Instruction (CI) Benefiting Diverse Learners

 (3-8) SessionTODOS: Mathematics for ALL presentation
Drawing on experiences with Latino students in grades 3-8, including English language learners, this session illustrates how CI principles can motivate and engage all students in rigorous mathematics. Session activities and handouts will focus on how norms, roles, and sample tasks support students applying mathematics in relevant contexts.

## Kathleen Ross

University of Arizona, Tucson

## Marta Civil

University of Arizona, Tucson
Belin Tsinnajinnie
University of Arizona, Tucson
10 (Convention Center)

## 696

## Connect to Content through Coaching

(3-12) Session
Engage in activities from a successful, multilevel coaching model for schools with students of low socioeconomic status. Participants will gain awareness of three commitments to coaching and connect with journaling, communication, conferencing, and parental involvement strategies. The model is aligned with NCTM's standards and focal points.

## Pam L. Warrick

Walden University, Little Rock, Arkansas

## C. Neelie Dobbins

University of Arkansas at Little Rock

697

## What Do Magnets Have to Do with Geometry and Developing Geometric Vocabulary? <br> (6-8) Session

This session will explore how to teach geometric concepts and vocabulary through hands-on manipulation of magnets. Teaching concepts such as angles, types of polygons and their specific properties, polyhedra, and nets with magnets will be demonstrated. This process is a valuable tool for students struggling with geometric thinking and vocabulary.

## Eric William Shippee

College of William and Mary, Williamsburg, Virginia
Robert L. Provost
King and Queen Elementary School, Mattaponi, Virginia
Marguerite (Margie) Mason
College of William and Mary, Williamsburg, Virginia
15 B (Convention Center)

## 698

Hook, Line, and Thinker
(6-12) Session
Take a tour of a vertical series of lessons in number, algebra, geometry, and probability created by grade 6-10 teachers. Mirrors, marbles, rabbits, "line dancing," birthday candles, and fruit punch are among the hooks that motivate students to construct and extend lines of reasoning through the grade levels and build understandings that last.

Ralph S. Pantozzi
Scotch Plains - Fanwood Public Schools, New Jersey
6 A (Convention Center)

## 699

## Making the Connection: Solving Problems with Graph Theory

(6-12) Session
Graphs can be very useful tools in solving problems, especially counting problems. Participants will engage in some problems that will be solved through graph theory. Handouts will include activities ready for the classroom. If you feel intimidated by the term graph theory, this session is for you.
Clifton Wingard
Delta State University, Cleveland, Mississippi

## 700

## Focus on High School: Reasoning and Sense Making in Statistics

## (9-12) Session

As part of its vision for reasoning and sense making in secondary school mathematics, NCTM has commissioned a series of companion books to focus on reasoning and sense making. This session will present some of the reasoning and sense making activities to appear in the forthcoming companion book on data analysis and probability.

Beth Chance
California Polytechnic State University, San Luis Obispo
J. Michael Shaughnessy

President Elect, National Council of Teachers of Mathematics; Portland State University, Oregon
Henry Kranendonk
Rufus King High School, Milwaukee, Wisconsin
5 B (Convention Center)

## 701

## Mathematical Masterpieces

## (9-12, Higher Education) Session

Participants will take a guided tour through some of the most important, ingenious proofs in the history of math. Though these masterpieces come from different eras and different cultures, what they all have in common is that they can be enjoyed by high school students-gems from Euclid, Archimedes, Ptolemy, Napier, Eüler, and more!
Gary Rubinstein
Stuyvesant High School, New York, New York
6 E (Convention Center)

## 702

## Opening Your Class by Mathematizing African History

> (9-12, Preservice and In-Service) Session
> Benjamin Banneker Association presentation
> This session will offer examples of mathematics openings to start class activities. The session is designed for mathematics educators to realize a need for a paradigm shift in order to bring students of African descent into the mathematics. The openings will include a variety of mathematical topics.

Kwame Anthony A. Scott
Benjamin Banneker Association, Inc., Oak Park, Illinois
17 B (Convention Center)

## 703

## A Different Approach to Teaching FirstGrade Mathematics

## (Pre-K-2) Gallery Workshop

Counting discrete objects is a common basis for introducing children to mathematical ideas. A different approach is to begin with generalized notions without using number. This approach enables first graders to reason algebraically. Participants will engage in activities designed to study fundamental mathematical ideas without having to count.

## Claire Okazaki

Curriculum Research and Development Group, University of Hawaii, Honolulu
Fay Zenigami
Curriculum Research and Development Group, University of Hawaii, Honolulu

3 (Convention Center)

## 704

## Game-Talk: The Value of Discourse (3-5) Gallery Workshop

Games may be fun, but if we want students to learn from them, we have to do more than just play! Mathematical learning is not in the fun. It is not even in the play. Mathematical learning takes place in the thinking and discourse about the play. Come to play, think, and share.
Mary Altieri
SUMTCHR, Inc., Putnam Valley, New York
5 A (Convention Center)

## 705

## Connect the Dots! Mathematics, Literature, and the Visual Arts

## (3-8) Gallery Workshop

The visual arts present an ideal medium through which students can express their ideas, thoughts, emotions, and understanding of mathematical concepts such as pattern, line, shape, and form. Experience literature-based activities designed to help students make connections. From Pollock to Dali, we explore what happens when a line bends.

## Mary Elizabeth Baker <br> University of North Dakota, Grand Forks

16 A (Convention Center)

706

## Online Math Strategy Games for the Middle School Curriculum

## (3-8) Gallery Workshop

Calculation Nation, an online world of math strategy games, is part of the Illuminations project and was launched at the 2009 NCTM Annual Meeting. In the past year, the site has improved and added new games. You will learn how to use these games with students as part of your middle school curriculum.

## Patrick Vennebush

National Council of Teachers of Mathematics, Reston, Virginia

15 A (Convention Center)

## 707

## Fraction Computation Emerges from

 Models Used to Solve Worded Problems (6-8) Gallery WorkshopChildren often lack understanding of why "invert and multiply" makes sense for dividing fractions. Participants will explore fraction multiplication and division through worded problems and models. They will examine actions implied by words within problems and analyze how actions provide a rationale for the fraction division algorithm.

## Melfried Olson

Curriculum Research and Development Group, University of Hawaii, Honolulu

## Judith Olson

Curriculum Research and Development Group, University of Hawaii, Honolulu

## Mary Pat Sjostrom

Chaminade University of Honolulu, Honolulu
17 A (Convention Center)

## 708

## Building Origami Polyhedra = Building Spatial Reasoning <br> (6-12) Gallery Workshop

Come build face, edge, and skeletal models to see how unit origami can engage a wide range of students in exploring deep 3-D geometric concepts-surface and dihedral angles, axes and planes of symmetry, chirality. and duality. Folding becomes vocabulary review. Assembling takes visualization and reasoning. Resulting models invite further study.

Margaret (Peg) Cagle
Lawrence Gifted Magnet School, Chatsworth, California 9 (Convention Center)

709
Fractal Functions: Connecting Geometry, Measurement, and Algebra
(6-12, Preservice and In-Service) Gallery Workshop
Use geometry and measurement concepts to make fractals. Then, use your fractals to develop the concept of function by representing their characteristics with words, symbols, tables, and graphs. Examine how the activities can be used to differentiate instruction in diverse classrooms and serve as assessments.

Mandy McDaniel
Boise State University, Idaho
Teri Willard
Central Washington University, Ellensburg
11 A (Convention Center)

## 710

Beyond Means, Medians, and Modes: Bringing More Authentic Statistical Inquiry to Your Mathematics Classroom

## (9-12) Gallery Workshop

Participate in a statistical study. Learn how to better help your students ask statistical questions, collect and analyze data, and make good conclusions from data. Activites in this presentation will help teachers develop their own activities to go beyond the tasks typically found in mathematics textbooks.
William Conrad Thill
Harvard Westlake, Los Angeles, California
14 A (Convention Center)

## 711

Using NCTM Enhanced Journal Articles to Build Mathematics Learning Communities (Preservice and In-Service) Gallery Workshop
Participants will actively engage in exploring journal articles that have been enhanced by NCTM's Professional Development Services Committee. The facilitators will model the process of using the journal articles to build school-based, professional learning communities.

Professional Development Services Committee
National Council of Teachers of Mathematics, Reston, Virginia

8 (Convention Center)

## 712

## Take the Chain Off Your Brain

## (General Interest) Session <br> Benjamin Banneker Association presentation

Imagine the power of raised expectations and beliefs for all learners. The speaker will use class lessons to demonstrate the impact of awareness that intelligence is not fixed. Drawing on social psychology, problem solving, and neuroscience, discussion will focus on how this affects the teaching and learning of African American students.

Salik Mukarram
Benjamin Banneker Association, Chicago, Illinois
17 B (Convention Center)

## 713

## S Learning about Number: Natural and Complex for Young Children <br> (Pre-K-2) Session

Learning about number is natural for children as they work with resources, draw pictures, and recognize symbols in a mathematics-rich environment. A range of number representations such as different arrangements of quantity, five- and ten-frame organizers, and number tracks support a strong conceptual understanding of number.

Rosemary Reuille Irons
Queensland University of Technology, Brisbane, Australia 6 D (Convention Center)

## 714

## For Math Coaches: Maintaining Your

 Balance (and Your Sanity)!
## (Pre-K-5) Session

How do you successfully balance responsibilities as a math teacher, coach, and school and division leader during your first years as a math specialist and coach? What do you have to keep in mind when working with new teachers, veteran teachers, and those in between? The speakers will share insights as to how they have worked through these issues.

## Rebecca Parker

Stafford County Public Schools, Virginia
Susan Sydla
Stafford County Public Schools, Virginia
Branch Wyatt Pronk
Stafford County Public Schools, Virginia
Cindy Sypolt
Stafford County Public Schools, Virginia
5 B (Convention Center)

715
Teaching the Children We Have: Simple Yet Effective Differentiation Techniques

## (3-5) Session

Join the speakers for lively discussions, engaging activities, and videos as they identify practical ways to bridge mathematics instruction for English language learners, students who need support, or students who need additional challenges. Move from theory to practice to make fractions comprehensible for all your students.

## Chris Confer

Consultant, Tucson, Arizona
Marco Ramirez
Tucson Unified School District, Arizona
11 B (Convention Center)

## 716

## Number-Sense Approach to $X$ Facts: Every Day Counts <br> (3-5) Session

Experience a schoolwide approach used in a Title 1 school to teach basic facts in a way that encourages students' reasoning and thinking while building fluency for all. A special array of flash cards and games help break harder facts into easier ones. Students focus on connections among $x$, division, and fractions of a set.

## Janet Gillespie

Great Source/Houghton Mifflin Harcourt, Portland, Oregon
15 B (Convention Center)

## 717

## Let's Make Triangles with Sticks! Geometry in Asian Textbooks

## (3-5) Session

This session will explore the teaching of triangles and angles in Japanese and Singapore textbooks. The presenters will share video clips of actual geometry lessons developed through lesson study and discuss the results and implications of their research.

William Jackson
Scarsdale Public Schools, New York
6 E (Convention Center)

## 718

## 1, 2, 3, 4: Let Me Count the Ways

(3-5, Preservice and In-Service) Session
This session features several multiplication algorithms and a nonstandard division algorithm to explore and verify. Come learn how to use the Egyptian, Russian, lightning, and more multiplication methods along with the scaffolding method of long division.

## Teresa Banker

Kennesaw State University, Georgia
14 B (Convention Center)

## 719

## Analyzing, Interpreting, and Connecting Data Relationships Using Virtual Manipulatives

(3-8) Session
Participants explore data relationships using several virtual manipulatives. They will make connections among statistical concepts including data analysis, trend lines, correlations, and the strength and direction of relationships. Virtual manipulatives provide a visual tool in modeling these connections and their applications for students.

Patricia Moyer-Packenham
Utah State University, Logan

## Arla Westenskow

Utah State University, Logan
6 F (Convention Center)

## 720

## Stories from the Community: ProblemSolving Experiences in Middle Grades

## (6-8, Preservice and In-Service) Session

Learn how online math education community members are successfully implementing contextual problem solving in middle grade classrooms. One teacher says, "... when students truly develop problem-solving skills, they should be able to use them even on standardized tests." Activities, techniques, sample problems, and resource documents will be shared.

## Suzanne Alejandre

The Math Forum @ Drexel, Philadelphia, Pennsylvania 10 (Convention Center)

## 721



Inclusion Strategies for Strong Connections and Successful Inclusion
(6-12) Session
See how to establish a strong foundation of connections and understanding for your intervention students that will allow them to build a solid structure of mathematical proficiency. Classroom-tested and datasupported strategies will be demonstrated. An extensive, ready-to-teach handout will be available.
Known throughout the country for motivating and engaging teachers and students, Fulton has coauthored more than a dozen books that provide easy-to-teach yet mathematically rich activities for busy teachers. Drawing on his 28 years in education, he is a frequent presenter, cohosts a Web site that provides resources to teachers (www.tttpress.com), and in 2005 was selected as California's middle school educator of the year.

## Brad Fulton

Mistletoe Elementary School, Redding, California 6 A (Convention Center)

## 722 <br> Construction Site Geometry: A Lesson in Cooperative Learning

## (6-12) Session

Interested in implementing cooperative learning, problemsolving, or performance assessment into your geometry course? Students will work in groups to design a corporate park in this activity developed in cooperation with the University of Cincinnati's STEP program. Each team has to solve problems, perform calculations, and compromise.

## Sara Garrison

Norwood High School, Cincinnati, Ohio
Brad Hunt
Norwood High School, Cincinnati, Ohio
2 (Convention Center)

## 723

Teaching Math to Transient Students
(6-12) Session
This session will give teachers strategies to catch transient students up with their current students. The speaker will look at several different districts who have successfully transitioned these students into their classrooms. She will also examine some of the language and cultural differences transient students have.

## Tracey Zak Johnson

Consultant, Aledo, Texas

## 7 B (Convention Center)

## 724 <br> Exploring Democratic Education, Opportunity, and Equity

(6-12) Session
Be prepared to think about how the opportunity to learn mathematics is related to democracy. Learn how democratic education is accessible to all students and is based on the assumption that all students can learn given the right circumstance. Explore mathematics in a context that addresses social justice.

## Carol Elaine Malloy

McGraw-Hill K-12 Mathematics, Chapel Hill, North Carolina

## 725

## Bacterial Mathematics and What It Means for Mathematics Education

(6-12, Higher Education) Session
New research debunks the myth of bacteria as primitive organisms; they are actually communicative, collaborative problem solvers capable of doing simple mathematics. This session compares video of collaborating bacteria and middle school mathematics classes to highlight salient social principles advocated by the current reform math movement.

## Thomas Ricks

Louisiana State University, Baton Rouge
4 (Convention Center)

## 726

## Dol Do?

(6-12, Preservice and In-Service) Session
TODOS: Mathematics for ALL presentation
This session will model effective strategies for engaging English language learners in meaningful mathematics and giving them access to the core curriculum. Attendees will be active participants in lessons that support English learners in acquiring academic language while making sense of the mathematics.
Ana Elisa England
University of California, Santa Cruz
Patricia Valdez
Pajaro Valley Unified School District, Watsonville, California 16 B (Convention Center)

## 727

## Using a Computer Algebra System (CAS) to Promote Engagement and Access to Algebra for All Students

 (9-12) SessionLearn how a CAS can be used to engage all students in learning algebra. See how the classroom becomes an active learning center where students hypothesize, justify, and communicate. Explore sample lessons and create CAS activities. Data will show changes in students' attitudes, teachers' attitudes, and students' achievement.

## Larry Osthus

Consultant, Des Moines, Iowa

## 728

## Differentiation through the Process Standards

## (Pre-K-5) Gallery Workshop

The process standards provide teachers with a pathway to meet the needs of all students. This presentation will identify ways to use the process standards to develop and maintain a differentiated classroom. Instructional strategies and activities will be shared.

Heather C. Dyer
Howard County Public Schools, Ellicott City, Maryland
John SanGiovanni
Howard County Public Schools, Ellicott City, Maryland
9 (Convention Center)

## 729

## Tangrams with a Different Twist <br> (3-5, Preservice and In-Service) Gallery Workshop

Participants will use tangrams to identify convex and concave polygons; measure area using nonstandard units of measure with monetary applications; name fractional parts of a shape; add, subtract, multiply, and divide fractions; and measure area and perimeter with standard units.
Celine J. Przydzial
Kutztown University, Pennsylvania
3 (Convention Center)

## 730

## "Stacking" for Success: A Strategy for Response to Intervention (RtI) Tier 2 Students

## (3-8) Gallery Workshop

Come learn about Stacking, a new, interactive process bringing math success to more than 11,000 students. Math activities are constructed in such a way that RtI Tier 2 students can take the lead to help the class solve math problems using the eight components of stacking. Participants will receive a copy of the activities to use in their classrooms

Nancy Tanner Edwards<br>Missouri Western State University, Saint Joseph<br>Jean Morrow<br>Emporia State University, Kansas

## 731

## Origami: A Tool for Reinforcing Angle Relationships

## (6-8) Gallery Workshop

Participants will create an origami book of angles. This activity will provide middle school students with an opportunity to make connections among multiple angle concepts by comparing and contrasting terms and ideas. The speaker will also discuss ways to connect angle relationships to students' daily life experiences.

Martha Y. Parrott
Northeastern State University, Broken Arrow, Oklahoma
5 A (Convention Center)

## 732

## The Patterns of Algebra: Linear Functions

(6-12) Gallery Workshop
The study of mathematics is the study of patterns. Algebra is accessible to every student when it is taught as patterns. You will discover the patterns relating to linear functions and discover how easily they can be generalized into a personal understanding of the function, its graph, and its solutions.

## Deena M. Lyons

Del Webb Middle School, Henderson, Nevada
14 A (Convention Center)

## 733

English Language Learners Achieving Success with Handheld Technology
(6-12) Gallery Workshop
TODOS: Mathematics for ALL presentation
With Texas Instrument support, TODOS created lessons on proportional reasoning that incorporate research-based practices for teaching English language learners with handheld technology. The lessons, field tested in California, facilitate the acquisition of academic language and enable students to enhance their mathematics achievement.

Jose Marcelino Franco<br>University of California at Berkeley<br>Christine Montes

Los Amigos High School, Huntington, California
16 A (Convention Center)

734

## Making It Happen: Re-engaging Students Who've Been Turned Off to Mathematics (6-12) Gallery Workshop

For too many students, the cost of learning mathematics is too high for them. Unlike failed learners, who at least try, intentional nonlearners believe that if they don't try, then they can't fail. In this interactive presentation, participants will learn strategies for re-engaging students who have decided that mathematics is not for them.

Pamela Annette Seda
DeKalb County Schools, Decatur, Georgia
15 A (Convention Center)

## 735

Three Ways to Teach Linear Regression
Using Illuminations Resources
(9-12) Gallery Workshop
Why should students with individual learning styles struggle with an instructional method they find difficult when you can use 3 different methods in the same class? Differentiate your instruction. Join in this gallery workshop to explore linear regression using cooperative learning, writing, and interactive tools, all from the Illuminations Web site.
Julia Zurkovsky
National Council of Teachers of Mathematics, Reston, Virginia

11 A (Convention Center)

## 736

## The Coaching Connection: Linking Instruction and Reflection

(Preservice and In-Service) Gallery Workshop
Are you grappling with what effective support for math instruction looks like? A grades K-8 math specialist shares insights from coaching individual teachers, facilitating gradelevel team meetings, and encouraging vertical collaborationall designed to foster a reflective practice and enhance instruction. Please join us to share your thinking!

## Danusia Therese Gerlach

Chicago Public Schools, Illinois
17 A (Convention Center)

740

## 737

## Equity in the Mathematics Classroom: A Tool for Lesson Planning and Reflection (General Interest) Session

How do teachers promote equity in the mathematics classroom? What are some characteristics of equitable mathematics classrooms? Participants will engage in a math activity and use an equity lens tool that is valuable for lesson planning and reflection and promotes meaningful discussion about reaching all students in the math classroom.

## Nancy Terman

University of California Santa Barbara
Maria Guzman
Oxnard High School, California
11 B (Convention Center)


## Using Guided Math to

 Differentiate Instruction
## (Pre-K-2) Session

Experience practical strategies to differentiate your math instruction using small-group instruction and openended math centers. Learn how the principles of guided reading can work for your math instruction! You can teach, reteach, and extend mathematical concepts every day.
Barbara Blanke is a teacher, author, and teacher educator. She taught 22 years in grades K-12 classrooms. For the past eight years she has been a professor and university supervisor in teacher education for the College of Education at California Polytechnic. She is currently an educational consultant for school districts throughout the country, providing professional development workshops and coaching for grades $\mathrm{K}-8$ mathematics teachers and administrators.

## Barbara Lynn Blanke

California PolyTechnic State University, San Luis Obispo

## 741

## Telling the "Whole" Story: Making Sense of Fraction Language

## (3-8) Session

Correct language use can give students a foundation for being successful in conceptualizing mathematical situations. This is particularly true with difficult topics such as fraction concepts and operations. Explore language use with fractions and learn strategies to help students develop fluency when describing these situations.

## Jennifer M. Tobias

Illinois State University, Normal
Juli K. Dixon
University of Central Florida, Orlando
Janet Andreasen
University of Central Florida, Orlando
10 (Convention Center)

## 742

## A Process for Developing STEM Curriculum and Instructional Materials

## (3-8) Session

The Science, Technology, Engineering, and Mathematics Curriculum Integration Project is an innovative approach to the design of curriculum and instruction materials in which these disciplines are connected as one. Teachers will examine a process that results in products that answer the question "Why do I need to know this?"

Joseph L. Mills, Jr.
CurrTech Integrations, LLC, Baltimore, Maryland
Hays Lantz
CurrTech Integrations, LLC, Baltimore, Maryland
2 (Convention Center)

## 743

## Developing Algebraic Reasoning: A Sequence of Geometric Pattern Tasks (6-8) Session

How can students better understand fundamental algebraic concepts prior to a formal course in algebra? This session will present a sequence of geometric pattern tasks designed to promote students' ability to generalize and their understanding of functions and variables. Teachers will come away with lessons for their own classrooms.

Kimberly Ann Markworth
University of North Carolina at Chapel Hill
16 B (Convention Center)

## 744

## Assessing Mathematical Concepts in Context

## (6-8) Session

Several engaging mathematical investigations and activities appropriate for assessing middle school students will be presented. Examples of students' work, assessment guidelines, and students' reflections will also be included. A variety of content strands will be addressed.

Winnie J. Peterson
Kutztown University, Pennsylvania
6 D (Convention Center)

## 745

Problem Solving: A Vehicle for Integrating Financial Literacy and the Mathematics Curriculum.

## (6-12) Session

It is becoming imperative to equip students with the tools needed for financial literacy. We will discuss problems that focus on core math competencies and are situated within financial contexts. These problems can introduce important personal finance concepts while helping develop students' problem-solving and critical-thinking skills.
Mai M. Sidawi
The Math Forum @ Drexel, Philadelphia, Pennsylvania 5 B (Convention Center)

## 746

## Putting Proof into Practice

## (6-12) Session

The ability to understand and use mathematical proof is an essential skill in mathematics, but it's rarely integrated into the curriculum outside geometry. This session will offer a model for teaching proof strategies in middle and high school, along with specific lessons that successfully incorporate proofs into any mathematics class.

## Carlos Rodriguez

Johns Hopkins University Center for Talented Youth, Baltimore, Maryland

## Stuart Gluck

Johns Hopkins University Center for Talented Youth, Baltimore, Maryland

6 E (Convention Center)

## 747

Exploring 3-D Geometry Using Google ${ }^{\text {TM's }}$ SketchUp ${ }^{\text {TM }}$
(6-12, Higher Education) Session
Three-dimensional geometry can be taught and learned in new and exciting ways using Google's free, 3-D design software package, SketchUp. Learn how to explore the traditional topics of solid geometry such as prisms and pyramids and the Platonic solids using this easy-to-use, powerful software package.
Jonathan Choate
Groton School, Massachusetts
Bonnie Roskes
3Dvinci, Washington, D.C.
4 (Convention Center)

## 748

## I'm Going to Be a Math Teacher: Why Didn't I Know This Before?

(6-12, Higher Education, Preservice and In-Service) Session

Provides participants with some of what a secondary methods teacher and his students have discovered are some deficiencies concerning conceptual understanding of several math procedures and formulas. Many preservice and in-service math teachers confess that they "should have known these things a long time ago."

## Steven Todd Williams

Lock Haven University of Pennsylvania
6 B (Convention Center)

## 749 <br> Sizing Things Up: Helping Students Understand Geometric Measurement

(6-12, Preservice and In-Service) Session
Through a series of hands on activities, participants will explore the concepts of area, perimeter, and volume and then apply them to methods of teaching the formulas for two and three dimensional shapes. Specifically, methods of teaching these formulas will be developed so that students can recall or reconstruct them.

Matthew Claren Chedister
Boston University, Massachusetts
14 B (Convention Center)

## 750

Demystifying Conditional Probabilities:
Not as Hard as It Looks

## (9-12) Session

Independence, conditional probabilities, and versus or-it all seems so confusing! Students don't understand, and teachers believe that they barely have a solid grip on how to apply the definitions and formulas. Ways exist to approach the subject that make sense, and the speaker will work through some of them.

Ruth Miller
Roland Park Country School, Baltimore, Maryland
6 A (Convention Center)

## 751

## Enhancing Students' Schema of Functions: Transformations, Compositions, and Inverses

(9-12) Session spond to function transformation questions. This limits them from seeing and using relationships between transformations and other concepts, such as compositions and inverses. Participants will examine some transformation tasks and how they relate to compositions or inverses.

## Patrick M. Kimani

California State University, Fullerton
6 C (Convention Center)

## 752

## Antagonist and Protagonist Discourse Model: African American and Latino(a) Students Conceptualizing AP Calculus (9-12, Higher Education, Preservice and In-Service) Session

## Benjamin Banneker Association presentation

The antagonist-protagonist discourse model was created to help increase the conceptualization of calculus by African American, Latino, and Latina students. This model emerges from culturally responsive pedagogy, essential questioning, inquiry-based learning, and issues regarding cognitive development in oral-based traditions.

Dante Abdul-Lateef Tawfeeq<br>Adelphi Univerity, Long Island, New York

6 F (Convention Center)

12:30 p.m.-1:30 p.m.


## Unlocking the Secrets of Happiness

Closing Session
Remarks by NCTM President Henry S. Kepner, Jr.
The speaker is close to a discoveryunlocking the secrets to happiness. He discovered hot spots of contentment and will share secrets of life satisfaction. Identifying the "happiest" regions on three continents and combining the data with information from interviews of well-being experts, he created a cross-cultural formula for life satisfaction.
New York Times best-selling author Dan Buettner has delivered the secrets to living longer to more than 250 audiences nationwide. Using National Geographic photography, he tells the stories of four of the world's longest-lived cultures and offers nine habits for people to get up to ten more good years out of life.

## Dan Buettner

Quest Network, Inc., Minneapolis, Minnesota
6 A (Convention Center)

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EXFRESSONS ANDRAPHSNS
GENERELZINGPATARNS POSITIVE AND NEGATIVE NUMBERS EXPRESSIONS EQUATIONS, AND EXPONENTS SHOWING RANATIORSHIRS WITH GRAPHS



## WE APOLOGIZE FOR NOT BEING ABLE TO FIT ALL OUR TITLES VISIT US IN BOOTH 1548 TO SEE THEM ALL

MATHEMATICS NAVIGATOR TARGETED INTERVENTION GRADES 2-10

RAMP-UP MATHEMATICS INTENSIVE INTERVENTION GRADES 6 - 9

## Registration and Access to Presentations

Badges must be worn to enter all presentations and the NCTM Exhibit Hall. Please be aware that a $\$ 10$ fee will be charged for replacement badges.

By registering for the 2010 NCTM Annual Meeting and Exposition, participants grant NCTM the right to use, in promotional materials, their likeness or voice as recorded on, or transferred to, videotape, film, slides, audiotapes, or other media.

## Research Presession

The Research Presession, jointly sponsored by the NCTM Research Committee and the Special Interest Group on Research in Mathematics Education of the American Educational Research Association, will be held in the San Diego Convention Center prior to the 2010 NCTM Annual Meeting and Exposition. The Research Presession Registration Area is in the Ballroom 6 Lobby (upper level) of the convention center.

The opening session will be held at 7:00 p.m. on Monday, April 19. Concurrent sessions will be held from 8:30 a.m. to 6:00 p.m. on Tuesday, April 20, and from 8:30 a.m. to 4:30 p.m. on Wednesday, April 21. There is no additional fee for on-site registration for the Research Presession. Registered Annual Meeting attendees may attend Wednesday's Research Presession presentations at no extra charge.

## For Your Child's Safety

Due to the size and nature of the 2010 NCTM Annual Meeting and Exposition, this event is not the appropriate setting for children under 16 years of age. Your hotel concierge will be able to recommend activities for children while you are attending the conference. We appreciate your understanding and cooperation. Children 16 years and over will need to register as nonteaching guests. To register a nonteaching guest, stop by the Registration Area at the San Diego Convention Center.

## Member Showcase

Everything you need to know about NCTM Membershipand how we can help you succeed as a teacher (and in your classroom) -is at the Showcase; from teachers' resources, including activities, lessons, and sample journals, to member certificates, personalized news releases, and more! Whether you are a new member, a current member, or thinking of joining, stop by to learn how NCTM can help you!

Also at the Member Showcase, members of the journal staff and the editorial panels will hold brief discussion groups on such topics as "Write for the Journal: It's Not as Scary as You Think," "Become a Reviewer and Beef Up Your Knowledge," and "Using Literature in Your Math Class." Be sure to stop by to chat or pick up a schedule, which will also be available in the onsite Daily News.

Stop by the Member Showcase in the lobby outside of Exhibit Hall B at the San Diego Convention Center.

## Bookstore

Save 25 percent off the list price on all purchases made at the onsite NCTM Bookstore, located in the Exhibit Hall at the San Diego Convention Center. View first-hand 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 math. Start your wish list today by previewing NCTM's wealth of resources at www.nctm.org/catalog.
Note on Sales Tax Exemptions: In order to be considered exempt from sales tax in the NCTM Bookstore, you must provide a copy of a California tax exemption certificate, issued by the state, at the time of purchase. NCTM is required by law to keep a copy of the certificate, and will be unable to return it to you. In order to qualify, payment must be made with a purchase order, check, or credit card from the school to which the California Exemption Certificate is issued. Personal checks, personal credit cards, and cash cannot be accepted in conjunction with tax exemption certificates.

The NCTM Bookstore is not equipped to handle shipping from the meeting site. A Business Center located at each meeting facility is ready to assist you with your shipping needs.

The NCTM Bookstore is partially sponsored by BeAnActuary.org.

## Shuttle Bus Service

Attendees who reserved their hotel room through NCTM's official housing company will receive complimentary shuttle bus service from hotels in the NCTM housing block to the San Diego Convention Center. Some of the hotels are within walking distance of the convention center and will not require shuttle bus service. Routes and schedules will be posted in your hotel lobby. The schedule will be followed as closely as possible. For a shuttle bus schedule or if you have questions, please visit the shuttle desk located at the shuttle area outside of Exhibit Hall B \& C.

## Tour Information

An exciting array of sightseeing tours will be available to NCTM attendees and guests through NCTM's shuttle company. For the complete offering, including descriptions, prices, dates, and times, please visit the tour desk located in the lobby area at the San Diego Convention Center.

## Information Booth

The NCTM Information Booth is located in the lobby area of the San Diego Convention Center, where local staff from San Diego will be on hand to answer any questions you may have and to assist you with directions and local information, from transportation and historical sites to shopping and entertainment.

## Lost-and-Found

Items for lost-and-found may be retrieved or turned in at the NCTM Information Booth. At the end of the conference, all
lost-and-found items brought to the Information Booth will be turned over to Convention Center Security.

## Restaurant Reservations

Explore the fabulous restaurants of San Diego! Stop by the Restaurant Reservations desk located in the lobby at the San Diego Convention Center. The friendly staff will be available to offer recommendations and make reservations.

## Bag and Coat Check

A bag and coat check is available for you to store your belongings during the conference hours for a nominal charge of $\$ 3.00$ per item. You can check your items at the bag check located in the San Diego Convention Center Thursday through Saturday during the program hours. All items are to be picked up each day by closing time; items may not be left overnight.

## Exhibit Hall Information

Be sure to make time in your schedule to visit the NCTM Exhibit Hall. The hours allow ample opportunity to explore, try out, and purchase products and services for use in your classroom or to help you meet your career goals. You'll also have the opportunity to meet the people who produce these products, get fresh ideas, and see demonstrations of how products work. Be sure to check out the list of exhibits and a map of the Exhibit Hall on pages 176-89.

## Exhibitor Workshops

Do you want more in-depth and personal interaction with exhibitors? If you do, plan to attend the Exhibitor Workshops. These workshops are held on Thursday, Friday, and Saturday and offer a wide variety of topics. See the program for Exhibitor Workshop offerings, indicated by CW before the presenta-

## Exhibits

 tion number. tion
## First Aid Station

A first-aid station is staffed at the San Diego Convention Center during the NCTM program. If you need medical services while in San Diego, please check with the hotel concierge for the closest medical facilities. As with any medical emergency, call 911 without hesitation.

## NCTM Clear Air Act

In accordance with a resolution of the 1978 Delegate
Assembly, smoking is permitted only in designated areas.

## Your Opinion Counts!

Thank you for attending the NCTM 2010 Annual Meeting and Exposition. In the days following the Annual Meeting, you will receive an e-mail asking for an evaluation of your meeting experience. Please take a moment to complete the conference attendee survey. Your feedback is important to us and will be instrumental in the future Annual Meeting and Exposition planning process.

## Cyber Café and Calculation Nation ${ }^{\text {™ }}$

Stop by the NCTM Cyber Café to check email or surf the Web. There are two Cyber Cafés each located in the back of the NCTM Exhibit Hall in the San Diego Convention Center. Wireless connections are available at the Convention Center for a fee.

Calculation Nation, part of NCTM's Illuminations Project, offers online math strategy games that can be played individually or against an online opponent. Come try out a game and learn more about Illuminations and other online resources from NCTM in the Cyber Café.
$\mathcal{A}$ special thank-you goes to our sponsors for generously supporting $\mathcal{N C T I M}$ by providing products and services to enhance your conference experience. Please stop by to thank the following sponsors when you are in the Exhibit $\mathcal{H}$ all.

## SMART

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INSTRUMENTS
Your Passion. Our Technology. Student Success."'


Forrest T. Jones \& Company

## F R E E M A N <br> M/ cyaw School Education Group



## Affiliate Membership

## Join an NCTM Affiliate Today!

Once you have joined NCTM, membership in an NCTM Affiliate is a terrific way to round out your professional involvement. Affiliates offer you an opportunity to link with teachers in your state, region, or city for support, professional development opportunities, community outreach, political advocacy, and information sharing.
The host Affiliates for the NCTM 2010 Annual Meeting and Exposition and the Affiliates-at-Large are listed below. To join one of these groups, e-mail the Affiliate contact for membership information.
NCTM has more than 230 Affiliates throughout the U.S. and Canada. For a list of all organizations affiliated with NCTM and information on how to join, please see the Affiliate Directory on the NCTM Web site at www.nctm.org/affiliates.

## Affiliate Information

## Host Groups

California Mathematics Council, Southern Section
Mike Contino, cmc-math@sbcglobal.net
Greater San Diego Mathematics Council (California)
Joan Commons, jcommons@ucsd.edu
Affiliates-at-Large
Adult Numeracy Network
Margaret Rogers, marogers-princess@sbcglobal.net
Association of Mathematics Teacher Educators
Gary Martin, martiwg@auburn.edu
Benjamin Banneker Association, Inc.
Lois Moseley, loismoseley@gmail.com
Council for Technology in Mathematics Education
Stephanie Cooperman, shc283@worldnet.att.net
North American Study Group on Ethnomathematics
Blidi Stemn, catbss@hofstra.edu
National Council of Supervisors of Mathematics
Terri Belcher, tbelcher@berkeley.edu
Society of Elementary Presidential Awardees
Lisa Black, lisazblack@yahoo.com
TODOS: Mathematics for ALL
Bob McDonald, mac@todos-math.org
Women and Mathematics Education
Dorothy Buerk, buerk@ithaca.edu

A representative from the NCTM Housing Bureau is available on-site for housing assistance in the registration area in Exhibit Hall B/C at the San Diego Convention Center.

## Housing Desk Hours

| Tuesday | 12:00 noon $-6: 00 \mathrm{p} . \mathrm{m}$. |
| :--- | :--- |
| Wednesday | 9:00 a.m. $-7: 00 \mathrm{p} . \mathrm{m}$. |
| Thursday | 8:30 a.m. $-4: 00 \mathrm{p} . \mathrm{m}$. |
| Friday | 8:30 a.m. - 4:00 p.m. |
| Saturday | 8:30 a.m. $-10: 00$ a.m. |


|  | Hotel |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | Best Western Bayside Inn 555 West Ash Street | \$170 | \$170 | \$179 | \$188 | \$188 |
| 2 | Courtyard by Marriott San Diego Downtown 530 Broadway Street | \$199 | \$199 | \$199 | \$219 | \$239 |
| 3 | Doubletree Hotel San Diego Downtown 1646 Front Street | \$199 | \$199 | \$199 | \$209 | \$219 |
| 4 | Embassy Suites Hotel San Diego BayDowntown 601 Pacific Highway | \$249 | \$249 | \$269 | \$289 | \$309 |
| 5 | Hampton Inn by Hilton San Diego Downtown 1531 Pacific Highway | \$179 | \$179 | \$189 | \$199 | \$209 |
| 6 | Hard Rock Hotel San Diego 207 5th Avenue <br> (suite) | $\begin{aligned} & \$ 260 \\ & \$ 315 \end{aligned}$ | $\begin{aligned} & \$ 260 \\ & \$ 315 \end{aligned}$ | \$260 | \$280 | \$280 |
| 7 | Hilton San Diego Bayfront One Park Boulevard | \$220 | \$220 | \$220 | \$240 | \$260 |
| 8 | Hilton San Diego Gaslamp Quarter 401 K Street | \$242 | \$262 | \$262 | \$282 | \$302 |
| 9 | Holiday Inn San Diego on the Bay 1355 North Harbor Drive | \$210 | \$210 | \$210 | \$225 | \$240 |
| 10 | Horton Grand Hotel, 311 Island Avenue | \$179 | \$179 | \$199 | \$219 | \$239 |
| 11 | Hotel Solamar, 435 6th Avenue | \$229 | \$239 | \$239 | \$259 | \$279 |
| 12 | Andaz San Diego (formerly lvy Hotel), 600 F Street | \$199 | \$199 | \$199 | n/a | n/a |
| 13 | Manchester Grand Hyatt San Diego* One Market Place | \$250 | \$265 | \$265 | \$305 | \$330 |
| 14 | Omni San Diego Hotel, 675 L Street | \$254 | \$274 | \$274 | \$294 | \$314 |
| 15 | Residence Inn by Marriott 1747 Pacific Highway | \$219 | \$219 | n/a | n/a | n/a |
| 16 | San Diego Marriott Gaslamp Quarter 660 K Street | \$253 | \$273 | \$288 | \$293 | \$313 |
| 17 | San Diego Marriott Cityview <br> Hotel \& Marina* Bayview <br> 333 West Harbor Drive  | $\begin{aligned} & \$ 259 \\ & \$ 279 \end{aligned}$ | $\begin{aligned} & \$ 259 \\ & \$ 279 \end{aligned}$ | $\begin{aligned} & \$ 259 \\ & \$ 279 \end{aligned}$ | $\begin{aligned} & \$ 284 \\ & \$ 304 \end{aligned}$ | $\begin{aligned} & \$ 309 \\ & \$ 329 \end{aligned}$ |
| 18 | The Sofia Hotel, One-Fifty West Broadway | \$170 | \$170 | \$170 | \$190 | \$200 |
| 19 | The US GRANTLuxury Collection Hotel 326 Broadway | \$229 | \$249 | \$249 | \$269 | \$289 |
| 20 | The Westgate Hotel 1055 Second Avenue | \$229 | \$229 | \$229 | \$239 | \$249 |
| 21 | W San Diego Hotel, 421 West B Street | \$229 | \$229 | \$229 | \$254 | \$299 |
| 22 | Westin Gaslamp Quarter 910 Broadway Circle | \$229 | \$249 | \$249 | \$269 | \$289 |
| 23 | Westin San Diego, 400 West Broadway | \$230 | \$230 | \$230 | \$250 | \$270 |

*Headquarters Hotel
Rates do not include current tax of $12.64 \%$; subject to change.
Hotels identified with a icon are within walking distance of the convention center. For a shuttle schedule visit www.nctm.org/sandiego.

## Map of San Diego

San Diego Convention Center Area



## Manchester Grand Hyatt San Diego



## San Diego Marriott Hotel \& Marina



Level Three


## San Diego Convention Center

## Ground Level



## Harbor Drive

## Directory and Special Locations

| ADA | nformation Booth |
| :---: | :---: |
| Bag Check | Lobby |
| Bookstore | .. Exhibit Hall B |
| Business Center | bby outside Hall D |
| Cyber Café | Exhibit Hall B/C |
| Exhibits. | Exhibit Hall B/C |
| Exhibitor Check | Exhibit Hall B/C |
| First Aid Room | ...Exhibit Hall B |
| Housing Desk. | .Exhibit Hall B/C |
| Information Booth | .... Lobby |
| Lost-and-Found | Information Booth |
| Mathematics Education Trust | Member Showcase |
| Member Showcase | .. Lobby |
| Press Room | Room 12 |
| Registration | Exhibit Hall B/C |
| Shuttle Desk | ea on Harbor Drive |
| Speaker Check-In. | Exhibit Hall B/C |
| Sponsorship Items Distribution | ......Exhibit Hall B/C |
| Tours. | .......Lobby |
|  | Lobby |

## San Diego Convention Center

## Mezzanine Level



Upper Level


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Local Arrangements Committee

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The National Council of Teachers of Mathematics is a public voice of mathematics education, supporting teachers to ensure equitable mathematics learning of the highest quality for all students through vision, leadership, professional development, and research. With nearly 90,000 members and more than 230 Affiliates, NCTM is the world's largest organization dedicated to improving mathematics education in prekindergarten through grade 12. The Council's Principles and Standards for School Mathematics includes guidelines for excellence in mathematics education and issues a call for all students to engage in more challenging mathematics. NCTM is dedicated to ongoing dialogue and constructive discussion with all stakeholders about what is best for our nation's students.
To learn more about NCTM products or services, including membership benefits and opportunities, visit www.nctm.org, email nctm@nctm.org, or call (800) 235-7566.
teachers of mathematics
This certificate is presented to in recognition of attendance and participation at
NCTM 2010 Annual Meeting and Exposition

## 2010



24
April 21-24,
california.
San Diego,
Henry S. Kepner, Jr. President, NCTM
(추)
NCTM

NCTM Annual Meeting and Exposition April 21-24, 2010
San Diego, California

Name of Provider: National Council of Teachers of Mathematics

## Educator's Name:

Description of Professional Development Activity: This is a three-day annual conference sponsored by the National Council of Teachers of Mathematics. Hundreds of presentations are offered for teachers of prekindergarten through college. Topics range from administration to geometry, precalculus to statistics.

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

| Date | Session \# | Session Title | Presenter(s) <br> Name(s) | Start/End <br> Time | PD Time <br> earned |
| :--- | :--- | :--- | :--- | :--- | :--- |
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| TOTAL Professional Development Hours Accrued: |  |  |  |  |  |

I certify that the above named educator accrued the indicated number of Professional Development hours.
Kichoon Yang
Executive Director, NCTM
Henry S. Kepner, Jr. President, NCTM

Please check with your state education agency and local administration to determine if these conference hours can be used for professional development credits.

# NCTM Individual Membership Application 

Visit www.nctm.org/membership to learn more and join!
CONTACT INFORMATION (PLEASE PRINT) All fields marked with an * are required for processing
First Name* $\qquad$ Last Name* $\qquad$ Please check ONE box for preferred mailing address, but please complete both columns for our records:

$\square$ Home Address
Institution* $\qquad$
 Address* ity* State/Prov* Z_ ZIP/PC* Country*
$\qquad$
$\square$ Check here to remove your name from rental lists (companies renting lists must obtain approval from NCTM before using lists).
NOTE: Membership pricing valid through May 31, 2010. Visit www.nctm.org/membership for up-to-date pricing.

## OPTION 1

## Full Individual Membership

Includes a print subscription to one NCTM journal (print version includes online access). Select ONE journal below:

| $\mathbf{\$ 7 8}$ | $\square$ | Teaching Children Mathematics (PreK-6) |
| ---: | :--- | :--- |
|  | $\square$ | Mathematics Teaching in the Middle School (5-9) |
|  | $\square$ | Mathematics Teacher (8-14) |
| \$105 | $\square$ | Journal for Research in Mathematics Education |

## Additional Print Journals:

May be selected to enhance your membership for as little as \$33 (print version includes online access).
$\begin{array}{lll}\square & \mathbf{\$ 3 3} & \text { Teaching Children Mathematics (PreK-6) } \\ \square & \mathbf{\$ 3 3} & \text { Mathematics Teaching in the Middle School (5-9) } \\ \square & \mathbf{\$ 3 3} & \text { Mathematics Teacher (8-14) } \\ \square & \mathbf{\$ 6 0} & \text { Journal for Research in Mathematics Education }\end{array}$

## PAYMENT SUMMARY

Membership Dues (Option 1 or 2 ) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . $\$$
Additional Print Journals (if choosing Option 1) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . \$
Additional Online Journals (if choosing Option 1 or 2) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . \$
Membership and Additional Journals Total . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . \$
\$
For 2-year membership, multiply by 2 and deduct $10 \%$. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . \$
For 3-year membership, multiply by 3 and deduct 15\%
. \$ $\qquad$
Foreign Postage (if applicable): For mailings outside the U.S., add $\$ 18$ for the first journal subscription and $\$ 4$ for each additional print journal subscription per year. For multiyear membership, please multiply foreign postage by 2 or by 3 and add to payment line at right.
. $\$$
Mathematics Educational Trust (MET) Support (Your contribution is tax deductible) . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . \$
\$ $\qquad$
TOTAL Payment to NCTM in U.S. Dollars
METHOD OF PAYMENT
$\square$ CheckMoney OrderAMEXMC $\square$ VISAP.O. \# $\qquad$

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## A

## AccuCut

## Booth: 1337

Fremont, Nebraska
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## www.accucut.com

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## The Actuarial Foundation

## Booth: 2026

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www.actuarialfoundation.org
The Actuarial Foundation offers free mathenhancement materials to every educator who comes to see us! Solve geometry challenges with the Geometrics Stage Crew! Or teach financial literacy with ease using our newest workbook, Building Your Future. To find out more about the Foundation or our math grants visit http://www.actuarialfoundation.org/programs/ for_teachers.shtml

## Adaptive Curriculum

Booth: 1750
Scottsdale, Arizona
Ph: 480-884-1689 Fx: 480-884-1888
www.adaptivecurriculum.com

## AIMS Education Foundation

## Booth: 1040

Fresno, California
Ph: 1-888-733-2467 Fx: 1-559-255-6396
aimsedu.org
AIMS Education Foundation develops curriculum for K-9 using hands-on activities. AIMS curriculum focuses on math and science investigations. The AIMS Model of Learning provides a practical method for differentiating instructional strategies to meet the diverse needs of all students.

## ALEKS Corporation

Booth: 2023
Tustin, California
Ph: 714-245-7191 x. 152 Fx: 714-245-7190
www.aleks.com
ALEKS is a unique, Web-based program that provides precise mathematics assessment and personalized learning correlated to all 50 states' standards. Through an artificial intelligence engine and adaptive questioning, ALEKS accurately assesses a student's knowledge and delivers highly targeted instruction on the exact topics a student is most ready to learn.

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Booth: 1548
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www.americaschoice.org
America's Choice is a new kind of educational organization. We offer comprehensive, proven solutions to the complex problems educators face in the era of accountability. America's Choice has an unparalleled history as a national thought leader and as the creator of research-based school improvement solutions that work for states, districts, and schools.

## American Book Company

Booth: 2133
Woodstock, Georgia
Ph: 888-264-5877 Fx: 866-827-3240 www.americanbookcompany.com FREE preview books available for CAHSEE, CST, EOCs, EOCEP, HSPE, LEAP, CRCTs, AIMSs, TAKS, FCAT, GHSGT, HSAP, OGT, MIAs, ECAs, HSA, SAT, ACT, and many other test preparation mathematics materials. HURRY to booth 2133 .

## American Contract Bridge League Booth: 1350

Horn Lake, Mississippi
Ph: 901-332-5586
www.acbl.org
The American Contract Bridge League, founded in 1937 and headquartered in Horn Lake, MS, is one of the largest bridge organizations in the world with over 165,000 members in North America, including the United States, Canada, Mexico, and Bermuday. The Not-for-profit organization (501C-4) determines North American rules of bridge, assists with international rules, sanctions club games and tournament games, and sponsors three North American Bridge Championships annually. The mission of the ACBL is to serve the bridge-related interests of its members and to promote and sustain the game of bridge. Visit www.acbl.org for more information.

## American Educational Products

LLC

## Booth: 1245

Fort Collins, Colorado
Ph: 800-446-8767 Fx: 970-484-1198
www.amep.com
American Educational Products, LLC, with divisions: Scott Resources, Hubbard Scientific, National Teaching Aids, Ginsberg Scientific, and Tuzzles® Puzzles, is a leading manufacturer of educational materials for Grades PreK-12.

## American Regions Mathematics League (ARML) <br> Booth: 1945

New York, New York
Ph: 212-724-9843
www.arml.com
ARML, an annual mathematics competition for high school students held each year on the weekend following Memorial Day simultaneously at Penn State, U. of Georgia, U. of Iowa, UNLV. Teams of 15 compete in four types of mathematical rounds. ARML brings together the best math students in the country for an exciting and provocative weekend.

## American Statistical Association Booth: 2122

Alexandria, Virginia
Ph: 703-684-1221 Fx: 703-684-3768
www.amstat.org/education

## Amsco School Publications, Inc.

 Booth: 1935New York, New York
Ph: 212-886-6500 Fx: 212-886-6515
www.amscopub.com
Amsco publishes textbooks, workbooks, test-prep and supplementary programs for Integrated Algebra, AP Calculus, Algebra 2 \& Trigonometry, Geometry, AP Statistics etc. for students in grades 7-12.

## Apperson Education Products <br> Booth: 2031

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appersonedu.com/go/NCTM
Apperson offers test scoring solutions for both the classroom and district level. Combine any Apperson scanner with our FREE DataLink software and gain immediate access to data-rich reports. Contact us to register for a free, no-risk 30-day trial.

## Association of Mathematics Teacher Educators <br> Booth: 228 <br> San Diego, California <br> Ph: 619-594-3971 Fx: 619-594-0725 <br> www.amte.net

AMTE and its members work together to promote and improve the education of preservice and inservice teachers of mathematics.

## Award Publishing Limited

## Booth: 2130

New York, New York
Ph: 212-246-0405 Fx: 212-246-0406
www.awardinteractive.com
AWARD Math partners print with technology to teach mathematics with a 21 st-century perspective. The new math program from AWARD Publishing is for grades $\mathrm{K}-2$. The animated texts and the activities, which are delivered online, will motivate students to problem solve and use mathematical reasoning in their learning.

## B

## Bach Company

Booth: 1348
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Ph: 800-248-2224 Fx: 650-494-1995
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The Bach Company, the largest educational distributor on the West Coast, has been serving the educational market for over 28 years. We provide high quality products and superior customer service! Product lines include, but are not limited to, Texas Instruments, Casio, Hewlett Packard, Sharp, Stokes, Top Rhino, Vernier \& Franklin.

## BeAnActuary.org

## Booth: 2028

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www.beanactuary.org
BeAnActuary.org is responsible for increasing the recognition of the actuarial profession among students, educators, and career counselors in high schools, colleges, and universities. Please stop by for career information for your students!

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