page 217

# 2013 <br> Annual Meeting <br> \& Exposition 

April 17-20 • Denver, Colorado


# NCTM 2013 Annual Meeting \& Exposition 

April 17-20 • Denver, Colorado

## HOST

Colorado Council of Teachers of Mathematics

## MEETING FACILITY

All Annual Meeting presentations will be held at the Colorado Convention Center and the Hyatt Regency Denver. See pages 182-185 for floor plans.

REGISTRATION
Wednesday
Thursday
Friday
Saturday
8:00 a.m. - 7:00 p.m.
7:00 a.m.
7:00 a.m.
7:00 p.m.
7:00 a.m.

EXHIBITS
Thursday
Friday
Saturday

$$
\begin{aligned}
\text { 8:30 a.m. } & -5: 00 \mathrm{p} . \mathrm{m} . \\
\text { 10:00 a.m. } & -6: 00 \mathrm{p} . \mathrm{m} . \\
\text { 9:00 a.m. } & - \text { Noon }
\end{aligned}
$$

BOOKSTORE

| Wednesday | 10:00 a.m. $-7: 00 \mathrm{p} . \mathrm{m}$. |
| :--- | ---: |
| Thursday | 7:00 a.m. $-5: 30 \mathrm{p} . \mathrm{m}$. |
| Friday | 7:30 a.m. $-6: 30 \mathrm{p} . \mathrm{m}$. |
| Saturday | 8:30 a.m. - Noon |

Advertisers Guide ..... 215
Coupons ..... 217-234
Affiliate Membership ..... 181
Bookstore ..... 178
BuzzHub ..... 178
Member Showcase ..... 178
Wi-Fi Access ..... 177, 178
Certificate of Attendance ..... 189-190
Committees, Program and Volunteer ..... 187
Delegate Assembly ..... 10
Exhibits ..... 179
Directory ..... 194-208
Floor Plans ..... 192-193
Workshops ..... 179
First Aid ..... 178
Floor Plans ..... 182-185
General Information ..... 177
Hotel Information and Map ..... 186
Information Booth ..... 178
Membership Application ..... 191
NCTM Officers ..... 187
On-Site Daily News .....  4
Program Information ..... 3
Wednesday Presentations ..... 5
Thursday Presentations ..... 9
Friday Presentations ..... 77
Saturday Presentations ..... 145
New Member and First Timers' Orientation .....  4
Strands ..... 3-4
Types of Presentations. ..... 4
Regional Caucuses ..... 6
Registration ..... 177
Research Presession ..... 177
Shuttle Bus Service. ..... 178
Speaker Index ..... 209-214
Sponsors ..... 180


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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 Denver!



Welcome to the world's largest annual gathering of mathematics educators! The NCTM 2013 Annual Meeting and Exposition brings together classroom teachers, coaches, leaders, mathematics educators, researchers, and mathematicians. We invite you to share ideas and network to gather information about effective mathematics teaching and learning. After this experience, you will return to your classroom full of new ideas and fresh perspectives on what you can do every day to help students you influence reach their mathematics potential.

Over the next three days, you will meet new colleagues, make new friends, and form professional and personal bonds that will last a lifetime. If this is your first NCTM meeting, you may feel a bit overwhelmed; however, once you adjust to the pace and all the opportunities available to you, soak in all you can because nothing measures up to the experience of an NCTM Annual Meeting.

For those of you who are veterans of NCTM annual and regional conferences, you know what you want to accomplish. This year's program includes some changes and additions, such as the new "Burst" sessions. Our goal is to bring you the best professional development experience to share with thousands of colleagues.

Our theme for the Denver meeting-"Reasoning and Proof: Is It True? Convince Me!"-complements our focus on reasoning and making sense for all students. You will also find a variety of other topics among the more than 700 presentations. Almost two years ago, the Program Committee began putting together an outstanding program with presentations that will challenge you to examine your own teaching practice, with reasoning and sense making at the core of whatever you teach.

While in Denver, find some time to enjoy the Mile-High City. Part of the excitement of an NCTM conference is getting out with friends and mixing pleasure with business after the meeting presentations. You can tour the Denver Museum of Nature and Science, see the impressive American Indian collection at the Denver Art Museum, or stroll down the 16th Street Mall and explore a full mile of shopping and dining attractions.

On behalf of the NCTM Board of Directors, the conference Program and Volunteer committees, the NCTM staff, and the many volunteers who have worked long, countless hours over the past two years to put together an extraordinary set of opportunities for you, welcome to Denver. Enjoy the conference!


Diane Weaver Volunteer Committee Chair, Colorado Council of Teachers of Mathematics, Denver


Kichoon Yang Executive Director, National Council of Teachers of Mathematics


The NCTM 2013 Annual Meeting and Exposition officially begins with the Opening Session, starting at 5:30 p.m. on Wednesday, April 17, in the Bellco Theatre at the Colorado Convention Center. Presentations on Thursday, Friday, and Saturday begin at 8:00 a.m. each day and are scheduled concurrently throughout the day.

We have made every attempt to offer 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.

Please remember:

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


## Learn $\leftrightarrow$ Reflect Strand $1 \leqslant$ R

REASONING AND PROOF: IS IT TRUE? CONVINCE ME! THURSDAY, APRIL 18

Plan one full day for the Focus of the Year topic, Reasoning and
Proof: Is It True? Convince Me! The strand begins with a morning Kickoff session and concludes with an end-of-the-day Reflection session. In between, choose from a variety of presentations covering the topic, all marked with the symbol above. Immerse yourself in the topic, and collaborate with leaders and colleagues. We ask participants to reflect on the following questions throughout the Learn $\leftrightarrow$ Reflect strand and then discuss them at the end of the strand, during the Reflection session:

- How do reasoning and proof increase opportunities for communication to help students develop mathematical understanding?
- How does stressing reasoning and proof influence your instructional decisions? And how do your instructional decisions influence how reasoning and proof should be stressed?
- How do reasoning and proof drive the lifelong learning of significant mathematics for all students? How does stressing reasoning and proof promote equity and diversity?
- How has participating in the Learn $\leftrightarrow$ Reflect strand changed your thinking about your use of reasoning and proof? What steps do you plan to take to promote reasoning and proof in your classroom/school?

New Teacher Strand NT<br>FRIDAY, APRIL 19

The New Teacher strand offers sessions and gallery workshops targeting the questions and concerns of new teachers and those training to become 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. The strand targets early-career teachers and those working on certification; all are welcome.

Look for the symbol above for presentations within the strand. Start early with the New Teacher Kickoff (\#273) on Thursday at 3:00 p.m. and finish with the New Teacher Celebration (\#595) on Friday at 4:45 p.m. for more fun. Visit www.nctm.org/newteacher/ for more information.

## Formative Assessment FA in the Common Core State Standards Strand

The Formative Assessment in the Common Core State Standards strand offers a broad examination of assessment issues and includes sessions about formative assessment at different grade levels, assessment for students from diverse populations, and special sessions about the PARCC (Partnership for the Assessment of Readiness for College and Careers) and SBAC (Smarter Balanced Assessment Consortium) Common Core assessments. Look for the symbol above for Formative Assessment in the Common Core State Standards presentations.

## Research in Algebraic Thinking Strand BA

The Research in Algebraic Thinking strand will summarize current research and discuss what is changing in algebra in classrooms. The strand concludes with an opportunity for researchers and teachers to collaborate. Look for the symbol above for Research in Algebraic Thinking presentations.

## Research in Proof Strand RP

The Research in Proof strand focuses on research concerning the teaching and learning of proof. The strand concludes with an opportunity for researchers and teachers to collaborate. Look for the symbol above for Research in Proof presentations.

## Response to Intervention Strand RtI

The Response to Intervention strand focuses on working with students struggling to learn mathematics. This strand will be ideal for Title I teachers and those involved with implementing a multitiered prevention model such as response to intervention. Look for the symbol above for Response to Intervention presentations.

## NCTM Committee Strand

NCTM committee presentations are identified by the symbol above. 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 on Friday and Saturday.

## Mathematical Association Presidents' Series

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

## 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 class-room-ready activities with the New Member and First Timers' Orientation. Plus, the sessions will discuss the conference's format and help you make the most of your experience. Our attendees represent the United States, Canada, and many international locations.

## Wednesday

Presentation \#1
4:00 p.m.-4:30 p.m.
Four Seasons 2/3 (Convention Center)

## Thursday

Presentation \#3
7:15 a.m.-7:45 a.m.
Centennial Ballroom B/C (Hyatt)

## Types of Presentations

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

Sessions ( 60 minutes) represent a common format in which the speaker relates his or her ideas to an audience. The speaker may use audiovisual equipment, technology, and handouts, and sessions may include audience participation. Rooms are set theatre style and vary in size.

Research Sessions ( 60 minutes) emphasize the connection between research and practice, presented in a common format in which the speaker relates his or her ideas to an audience. The speaker may use audiovisual equipment, technology, and handouts, and sessions may include audience participation. Rooms are set theatre style and vary in size.

Gallery Workshops ( 75 minutes) have rooms set with round tables for hands-on work and additional gallery seating around the perimeter of the room. Gallery participants receive the print materials and observe the workshop in a fashion similar to that of a classroom observer.


Bursts ( 30 minutes) are concise presentations that focus on a specific topic or idea. The goal is information sharing, conveyed quickly and succinctly. Bursts are not appropriate for hands-on activities, group work, or lengthy topics.

Exhibitor Workshops ( 60 minutes) are set theatre style for at least 120 people. Exhibitors showcase their products and services away from the Exhibit Hall. Look for the symbol ©W indicating exhibitor workshops in the program book.

## Grade Bands

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

- Pre-K-2
- Grades 3-5
- Grades 6-8
- Grades 9-12
- 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 NCTM 2013 Annual Meeting and Exposition, as well as program changes and cancellations. The Daily News will be distributed in the lobby of the Colorado Convention Center and available in the Hyatt Regency Denver.

## The Math Forum @ Drexel: Reflecting on Mathematical Practices Since 1992



Make sense, persevere, generalize, apply, reason and critique, build mathematical models, use strategies, look for patterns and structure-these are the practices that the Common Core State Standards and leaders are saying "should be as much of a goal of the mathematics curriculum as the learning of specific content." These have been the focus of the Math Forum community every day since 1992. Our community of over 3.5 million visitors each month focuses on:

- Implementation of the Mathematical Practices
- Technology-Supported Collaboration
- Formative Assessment and Grounding Instruction in Student Work
- Productive Math Talk
- Connecting Conceptual Development to Procedural Fluency through Problem Solving Strategy Development
- Professional Learning Communities that Connect the Informal to the Formal

DREXEL UNIVERSITY
School of

## Education

The Mathematics Learning and Teaching Program in Drexel University's School of Education offers a one-of-a-kind graduate experience for mathematics teachers and leaders. Each of the program options combines the best of the Math Forum's technologically-oriented and dynamic resources with an experiential, research-based curriculum centered on supporting the practices of the Common Core and features a focus on problem solving, communication, formative assessment, and individualized instruction. Options include:

- Online Master's Program in Math Education
- Math Leadership and Coaching
- Ph.D. Concentration in STEM Education


## mathforum.org/nctm/

# RENAISSANCE LEARNING <br> Accelerating learning for all 

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## Wednesday Planner

## HIGHLIGHTS

New Members and First Timers' Orientation (Presentation 1)
Opening Session: The Power of Just One Teacher (Presentation 2)

## 4

FACEBOOK
Become a fan! www.nctm.org/facebook


## TWITTER

Stay informed during the Annual Meeting! \#NCTMDenver

## ATTEND THE RESEARCH PRESESSION

Registered for the Annual Meeting? You can attend Wednesday's Research Presession at no extra cost! Visit the Research Presession Information Desk at the Colorado Convention Center, Lobby A, for program information.


## REGISTRATION HOURS

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

## BOOKSTORE 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 comply with fire codes, we will have to ask persons sitting on the floor or standing to leave the room.

# Regional Caucuses for Delegates and Alternates 

2:30 p.m.-4:30 p.m.
Colorado Convention Center
Rooms 702/704/706

| CAUCUS | PRESIDERS |
| :--- | :--- |
| Affiliates-at-Large | Anne Collins, Lesley University, Graduate School of Education, Cambridge, Massachusetts |
| Canadian | Maureen MacInnis, Charles P. Allen High School, Bedford, Nova Scotia |
| Central | Janet Herrelko, University of Dayton, Dayton, Ohio <br> Chris Moody, Clayton High School, St. Louis, Missouri |
| Eastern | Nancy Zarach, Consultant, Syracuse, New York <br> Janie Zimmer, Research-Based Education, Reading, Pennsylvania |
| Southern | Cathy Shelton, W. T. Woodson High School, Fairfax, Virginia <br> E. Jean Ware (Retired), Caddo Parish School District, Shreveport, Louisiana |
| Western | Lisa Scott, Billings Public Schools, Billings, Montana <br> Nancy Terman, University of California, Santa Barbara |



## 4:00 P.M.-4:30 P.M. <br> 1 <br> New Members and First Timers' Orientation

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

NCTM Board of Directors
National Council of Teachers of Mathematics, Reston, Virginia
Four Seasons 2/3 (Convention Center)

## 5:30 P.M.-7:00 P.M.

2


## The Power of Just One Teacher

Opening Session by Mayim Bialik
Remarks by NCTM President Linda Gojak
Mayim Bialik, the Emmy-nominated actress on The Big Bang Theory and real-life neuroscientist, is on a mission to help educators and parents inspire students to pursue STEM education and careers. Bialik will share her unique journey from child actress to neuroscientist to playing a scientist on TV and working with Texas Instruments.

Mayim Hoya Bialik received her BS in neuroscience and in Hebrew and Jewish studies from UCLA in 2000 and earned a PhD in neuroscience in 2007 from UCLA, specializing in obsessive-compulsive disorder in adolescents with Prader-Willi syndrome. She was born to first-generation American teachers and documentary filmmakers and was raised in Los Angeles, attending both public and religious school. Bialik is best known for her lead role in the 1990s NBC sitcom Blossom, as well as for portraying the young Bette Midler in Beaches. She appears regularly on CBS's The Big Bang Theory as Amy Farrah Fowler, Sheldon's "friend who is not his girlfriend."

## Mayim Bialik

Actress, Neuroscientist, and Texas Instruments Spokesperson, Los Angeles, California
Bellco Theatre (Convention Center)

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## Get Published! Be a Journal Referee. Avoid Common Writing Pitfalls!

## Find out how at the new BuzzHub Stage located in the exhibit hall.

# NCTM's 2013 Annual Meeting and Exposition April 17-20 • Denver, Colorado 

The journal editors from Teaching Children Mathematics, Mathematics Teaching in the Middle School, and Mathematics Teacher will be giving a series of mini-sessions to help you write or referee for one of NCTM's school journals. Inside of 15 minutes, you'll discover how to submit your ideas for publication, volunteer as a referee, or polish an existing manuscript. The editors will explain the peer-review process, answer your questions, point you in the right direction, and allay any fears you may have about getting started. All for a price that can't be beat-free!

## Here's what's going on:

Get Published
Discover how simple it is to turn your ideas into articles.
Presented by Sara-Lynn Gopalkrishna, MTMS editor

Thursday, April 18:
10:40-10:55 a.m. and 1:10-1:25 p.m.

Friday, April 19:
10:30-10:45 a.m. and 1:50-2:05 p.m.

## Be a Journal Referee

Find out how critiquing manuscripts can help your career.
Presented by Albert Goetz, MT editor

Thursday, April 18:
11:05-11:20 a.m. and 1:35-1:50 p.m.

Friday, April 19:
10:55-11:10 a.m. and
2:15-2:30 p.m.

## Avoid Writing Pitfalls

Learn hints on steering clear of those pesky manuscript potholes.
Presented by Beth Skipper,
TCM editor
Thursday, April 18:
11:30-11:45 a.m. and
2:00-2:15 p.m.
Friday, April 19:
11:20-11:35 a.m. and
2:40-2:55 p.m.
childrent

# ${ }^{66}$ This book will be your road map to implementing the CCSS for Mathematical Practice. ${ }^{9}$ 

-Susan 0'Connell and John SanGiovanni

## Putting the Practices Into Action

 Implementing the Common Core Standards for Mathematical Practice K-8Susan O'Connell and John SanGiovanni

The Standards for Mathematical Practice promise to elevate students' learning of math from knowledge to application and bring rigor to our math classrooms. But how can we incorporate the Practices into our teaching and ensure that our students develop these critical skills? Sue O'Connell and John SanGiovanni unpack each of the eight Practices and provide a wealth of practical ideas and activities to help you quickly integrate them into your existing math program.

## Putting the

 Practices Into ActionGrades K-8 / 978-0-325-04655-6 / 2013 / 168pp / \$19.00

## Meet the Content Standards with Mastering the Basic Math Facts



Mastering the Basic Math Facts in Addition and Subtraction Mastering the Basic Math Facts in Multiplication and Division Strategies, Activities \& Interventions to Move Students Beyond Memorization Susan $0^{\prime}$ Connell and John SanGiovanni
Add/Subt:Grades K-3 / 978-0-325-02963-4 / 2011 / 192pp / \$25.00
Mult/Div: Grades 2-6 / 978-0-325-02962-7 / 2011 / 192pp / \$25.00
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## HIGHLIGHTS

New Members and First Timers' Orientation (Presentation 3)
64th Annual Delegate Assembly (Presentation 4)
Learn $\leftrightarrow$ Reflect Kickoff Session (Presentation 55)
NCTM President's Address (Presentation 223)
New Teacher's Workshop and Kickoff (Presentation 273)
Learn $\leftrightarrow$ Reflect Reflection Session (Presentation 278)

## ICON LEGEND

eW Exhibitor Workshops
FA Formative Assessment
LSD Learn $\leftrightarrow$ Reflect

## Presentation Numbers

54.2, 54.3, 54.4, 54.5, 110.1, 110.2, 110.3, 110.4, 164.1, 164.2, 164.3, 164.4, 194.1, 194.2, 194.3, 194.4, 249.1, 249.2, 249.3, 249.4, 301.1, 301.2, 301.3, 301.4 179, 275

55, 117, 118, 120, 121, 127, 129, 131, 136, 168, 170, 173, 174, 176, 182, 190, 191, 225, 226, 227, 233, 235, 237, 243, 246, 278

## NCTM Committee Presentation $\quad 4,112,142$

$N$ New Teacher 273

RA Research in Algebraic Thinking 8, 63, 74, 114, 219
Rt] Response to Intervention
178, 230, 282


## THE BUZZHUB

The BuzzHub is the hub for networking as well as showcasing various NCTM resources. Learn more about your membership, pick up free take-home activities, check your e-mail, exchange ideas with your peers, and share your experiences. Be sure to BYOD (bring your own device).

## REGISTRATION HOURS

7:00 a.m.-4:00 p.m.
FIRE CODES


## FACEBOOK

Interact with your colleagues! www.nctm.org/facebook


TWITTER
Use Twitter to follow the Annual Meeting! \#NCTMDenver

[^0]7:15 A.M.-7:45 A.M.

## 3 <br> New Members and First Timers' Orientation

(General Interest) Session
New to NCTM? Join members of the NCTM Board of Directors to learn how to maximize your membership experience. From journals, online lessons, tools, and activities to networking and career-advancement opportunities, discover all that NCTM has to offer you. First-time attendees, learn how to make the most of your time at the conference.
NCTM Board of Directors
National Council of Teachers of Mathematics, Reston, Virginia Centennial Ballroom B/C (Hyatt Regency)

## 7:30 A.M.-9:00 A.M.

## $4<8$ <br> Sixty-Fourth Annual Delegate Assembly

(General Interest) Session
This session is a forum for delegates and designated leaders of NCTM Affiliates to make recommendations to the NCTM Board of Directors concerning activities and policies of NCTM and mathematics education.

NCTM Affiliate Services Committee
National Council of Teachers of Mathematics, Reston, Virginia Centennial Ballroom D (Hyatt Regency)

8:00 A.M.-9:00 A.M.

## 5

Chaos Games and Fractal Images
(General Interest) Session
President Series Presentation
See how to incorporate some interesting topics in contemporary mathematics, such as chaos and fractals, into the grades 6-12 curriculum. I give this session twice each year during the Math Field Days in Boston.
Robert L. Devaney
Mathematical Association of America; Boston University, Massachusetts

108 (Convention Center)

## 6 <br> Math Lessons from Research <br> (General Interest) Session

Math education is in a state of dramatic change. What does the research say that offers reliable guidance to using new standards such as the Common Core State Standards, new curricula, and new teaching strategies? Discuss lessons from recent research. At the core of many successful efforts are learning trajectories: research-based paths of learning and teaching.

Douglas H. Clements<br>University of Denver, Colorado

## Julie Sarama

University of Denver, Colorado
Capitol Ballroom 4 (Hyatt Regency)

## 7

## Response to Intervention: Evidence-Based Interventions <br> (General Interest) Research Session

What does the research say about effective instruction for learners who struggle with mathematics? How can educators use these findings to support students receiving tiered interventions? View activities, evaluate materials, and receive handouts summarizing evidence-based interventions. I will share references and resources.

Linda L. Forbringer
Southern Illinois University Edwardsville

## 705/707 (Convention Center)

## 8 BA

Teaching and Learning of Algebraic Thinking: Research Insights

## (General Interest) Session

We will examine current research and discuss how algebra is changing in classrooms. We will also answer questions and overview the day's presentations.

Daniel I. Chazan
University of Maryland, College Park
Mark Driscoll
Education Development Center, Waltham, Massachusetts
Megan Franke
University of California, Los Angeles
Mile High 1 C/D (Convention Center)

## 8.1 <br> Teacher Professional Learning in the Era of the Common Core State Standards

## (General Interest) Session

The Common Core State Standards brings with it an unprecedented opportunity to share resources and knowledge across districts and states, changing how educators can learn from and share with each other. I will engage participants in professional development modules and resources for teachers, to encourage a community of sharing and professional learning.

Ellen Whitesides
Institute for Mathematics and Education, University of Arizona, Tucson

Capitol Ballroom 1-3 (Hyatt Regency)

## 9 <br> Standards for Mathematical Practice in Student-Friendly Language for Grades K-2 <br> (Pre-K-2) Session

Explore how to use the eight Common Core State Standards for Mathematical Practice with younger children. Learn to reword each Standard for Mathematical Practice as an "I can" statement with student-friendly language and how to use these standards to facilitate a culture of problem solving.

## Jeanne M. White

Elmhurst College, Illinois
102 (Convention Center)

## 10 <br> Continual Formative Assessment Using the Common Core State Standards Mathematical Practices <br> (Pre-K-5) Session <br> The eight Common Core State Standards Mathematical Practices can be paired as Math Sense Making, Math Structure, Math Drawings, and Math Explaining. Hearing student reasoning and seeing student math drawings in a Math Talk Community supports continual formative assessment that the teacher can use immediately. Teachers will analyze videos for the Mathematical Practices.

## Karen Fuson

Retired, Northwestern University, Evanston, Illinois
Mile High 4 A/B (Convention Center)

## 11 <br> Helping Young Children Develop "Mathematical Habits of Mind"

## (Pre-K-5) Session

Do your students think like mathematicians: looking for patterns, eagerly justifying their reasoning, striving to make sense of mathematics, and appreciating its power and beauty? Come see classroom-tested ideas for developing these mathematical habits of mind and learn how such habits are related to the Common Core State Standards's Mathematical Practices.

## Diana V. Lambdin

Indiana University, Bloomington
401/402 (Convention Center)

## 12 <br> Math Workshop: What Are the Kids Doing?

(3-5) Session
Math stations/centers, think-tac-toes, must-do/can-do lists, and other practice activities allow teachers to incorporate differentiation. Learn how they work in a math workshop model to foster cooperative and independent learning. I will share student work, resources, and strategies for accountability and management.

## Susan H. Davies <br> Fairfax County Public School, Springfield, Virginia

Mile High 2 A (Convention Center)

## 13 <br> Making Mathematics Explicit <br> (3-8) Session

This presentation is based on the work of Hiebert and Grouws. We will model student engagement strategies, mathematical discourse, and making the mathematics explicit. I'll give attention to the Mathematical Practices that are used as participants work on a mathematical task.

## Mary Buck

National Academic Educational Partners, Berkeley, California
207 (Convention Center)

## $\rightarrow$ Learn from the Experts

From these sessions to your classroom,
find out what's new from the nation's leading educators.


11:00am - 12:00am Marilyn Burns
Lesson Learning from Interviews about Numerical Reasoning Four Seasons 2/3
(Convention Center)


3:30pm - 4:30pm
Genni Steele \& Le'Vada Gray
Math Classroom Routines that Support Reasoning 108 (Convention Center)
M) Math Solutions.

Booth \# 1301

## Friday, April 19th



## 2:00pm - 3:00pm

 Kimberly BrokerTurn Toward Success: How High-Quality Interactions Raise Student Achievement 501/502
(Convention Center)


2:45pm - 4:00pm Harold Asturias
Using the Mathematical Practices as Scaffolding for Academic Language Development
Mile High 1 E/F
(Convention Center)


## VISIT US AT BOOTH \#917

## 14 <br> Changing Outcomes for Kids: Increasing Algebra Readiness in Grades 6-8 <br> (6-8) Research Session <br> Explore our research and experience with respect to how heterogeneously grouping students and flexible weekly grouping for differentiation affects student growth in mathematics classes.

## Ryan D. Martine

Preston Middle School, Poudre School District, Fort Collins, Colorado

Sue Martino
Preston Middle School, Poudre School District, Fort Collins, Colorado

## Kathy Sampson

Preston Middle School, Poudre School District, Fort Collins, Colorado

505 (Convention Center)

## 15 <br> Developing Proportional Reasoning by Using Manipulatives

(6-8) Session
Do your students need hands-on activities to help develop their understanding of unit rates, proportional reasoning, and slope? Discover the benefits of using virtual and hands-on manipulatives to help your students better understand these important topics, and see some examples of how to use various manipulatives to teach these concepts.

## Kevin Dykema

Mattawan Middle School, Michigan
709/711 (Convention Center)

## 16 <br> Influencing Student Reasoning with Tables and Graphs by Using Technology <br> (6-8) Research Session <br> Explore research related to reasoning and proof and proportional relationships. Examine classroom actions that show how a classroom community uses valid arguments to justify mathematical claims for finding the next term and the $n$th term in a table of values. <br> Judith Olson <br> University of Hawaii, Honolulu <br> Brendan Brennan <br> University Laboratory School, Honolulu, Hawaii

## 17 <br> Let's GO with Reasoning

## (6-8) Session

Experience activities that strengthen the reasoning abilities of every student, including English language learners, by using Graphic Organizers.

## Jennie M. Bennett

NUMBERS Mathematics Professional Development, Houston, Texas

Mile High 2 C (Convention Center)

## 18 <br> Assessing Common Core State Standards for Mathematical Practice: Challenges and Opportunities <br> (6-12) Session

Assessing mathematical practices can be challenging. What content knowledge best aligns with each of the practice standards? What kinds of technology best allow students to interact with the practices? What kinds of scenarios engage students? We will share our experiences developing innovative tasks for assessing mathematical practices.

Luis E. Saldivia
Educational Testing Service, Princeton, New Jersey
Elida Wylie
Educational Testing Service, Princeton, New Jersey
703 (Convention Center)

## 19 <br> Incredilible Math Tasks: Developing the Standards for Mathematical Practice <br> (6-12) Session <br> Work through (and receive) a set of excellent worthwhile math tasks with strategies to develop abstract reasoning and effective classroom discourse. We will focus on developing all eight Standards for Mathematical Practice. Leave with resources you can use on Monday morning. <br> William Barnes <br> Howard County Public School System, Ellicott City, Maryland <br> Jennifer Novak <br> Howard County Public School System, Ellicott City, Maryland

Mile High 4 E/F (Convention Center)

## 20 <br> Making Connections: A Middle School Maximization Exploration <br> (6-12) Session <br> Maximization problems are not just for calculus. Using a lesson rich in connections between equations, tables, patterns, and graphs, you'll learn how to teach your middle school or high school students how to move from conjecture to proof in solving a classic max/min problem. <br> Carol DeFreese <br> Ft. Zumwalt School District, O'Fallon, Missouri <br> 601 (Convention Center)

## 21 <br> Picture Yourself Having Fun at Math

 (6-12) SessionUse photography to incorporate real-world situations into your mathematics classroom. Use pictures to reinforce concepts involving geometric shapes, areas, volumes, similar objects, and transformations, as well as reinforce conic sections, the Pythagorean theorem, slope, and much more. You'll get a CD containing ready-to-use examples.

Mary A. Robertson
Edison State College, Fort Myers, Florida
Mile High 3 B (Convention Center)

## 22 <br> Teaching Mathematics with a Tablet PC <br> (6-12) Session

Using a tablet PC can bring to life proof and understanding of key mathematical concepts. Students use programs such as FluidMath (Brown University), Excel, Microsoft OneNote Notebooks, DyKnow (Dynamic Knowledge), Community Clips (videos), and e-textbooks, all on their tablet PCs, to explore concepts and create their own understanding of algebra.

## Suzanne Lewis

Cincinnati Country Day School, Ohio
702 (Convention Center)

## 23 <br> How Many to Order? Applying the Economic Order Quotient

## (9-12) Session

Learn to use the Economic Order Quantity, a management tool, to decide how much of a product to carry in stock to minimize ordering and holding costs. Use technology and algebra to solve a specific example of the problem and generalize the result. We will share open-ended questions for launching the activity.
Thomas G. Edwards
Wayne State University, Detroit, Michigan
Kenneth R. Chelst
Wayne State University, Detroit, Michigan
S. Asli Ozgun-Koca

Wayne State University, Detroit, Michigan
501/502 (Convention Center)

## 24 <br> Modeling: IInvestigating a Unique Design of the Common Core State Standards <br> (9-12) Session

The Common Core State Standards for Mathematics articulate modeling as a conceptual category for high school. It is uniquely connected to the other conceptual categories by a modeling framework. Experience a high school probability investigation (sports related) that unpacks this standard and its connection to other conceptual categories.

## Henry Kranendonk

Marquette University, Milwaukee, Wisconsin

## Four Seasons 1 (Convention Center)

## 25 <br> The Math behind the Heavens and the Earth <br> (9-12) Session <br> Galileo once wrote, "Mathematics is the language with which God has written the universe." Humanity's desire to understand the cosmos drove much of the development of math. Learn how astronomers from Thales to Newton used, or invented, many topics from high school math to virtually explore the heavens.

Gary M. Rubinstein
Stuyvesant High School, New York City, New York
Centennial Ballroom F (Hyatt Regency)

## 8:00 A.M.-9:00 A.M.

## 26 <br> Transform Triangle Congruence and Similarity by Using Core Math Tools (9-12) Session

Experience resources for reasoning and proving triangle congruence and similarity conditions by using transformations and coordinate models. Examine how Common Core State Standards mathematical practices and geometry standards can be implemented using Core Math Tools, mathematical software for teachers and students, freely available at www.nctm.org/coremathtools.

## Brin Keller

Michigan State University, East Lansing
605 (Convention Center)

## 28 <br> Teaching Math for Social Justice: Health Disparities in Alaska <br> (9-12, Preservice and In-Service) Session <br> Research suggests that teaching mathematics for social justice expands the notion of equity work. I will share findings and lead a discussion on a real-world project that integrates content on health disparities in Alaska. The discussion will include implications for teaching mathematics for social justice in a Common Core State Standards era.

## Alison Mall

University of Alaska Anchorage
203 (Convention Center)

## 29

## Inquiring Minds Want to Know: The Common Core State Standards in College

(Higher Education, Preservice and In-Service) Session Explore examples of problems and inquiry methods illustrating the Standards for Mathematical Practice in mathematics courses for elementary and middle grades mathematics teachers. The courses emphasize communications, reasoning, and sense making. Problems will illustrate algebraic and geometric reasoning.

## Tommy G. Smith

University of Alabama at Birmingham

## Charles Calhoun

University of Alabama at Birmingham
Mineral Hall F/G (Hyatt Regency)

## 30 <br> Communicating Performance for Common Core State Standards

## (Preservice and In-Service) Session

Many schools have begun to align curriculum and instruction with the Common Core State Standards. But how will they clearly communicate achievement to students and parents? Explore how to implement standards-based grading at the building and classroom level. Handouts offer examples of assessments, grade books, and parent letters.

## Forrest Clark

North Thurston Public Schools, Lacey, Washington
Elizabeth Clark
North Thurston Public Schools, Lacey, Washington
107/109 (Convention Center)

8:00 A.M.-9:15 A.M.

## 31 <br> Exploring Numeracy throughout the Day <br> (Pre-K-2) Gallery Workshop

Having a strong sense of number is crucial to math success. The Common Core State Standards have placed a greater emphasis on number in the early grades. In this hands-on gallery workshop, you will learn ideas on how to incorporate numeracy explorations during calendar, centers, transitions, seatwork time, game time, and intervention.
Cindy Pray
Adams 12 Five Star Schools, Broomfield, Colorado

8:00 A.M.-9:15 A.M.

## 32

## Time for Talk

(Pre-K-2) Gallery Workshop
Do you want to learn how to engage your students in more productive discussions and strengthen their mathematical ideas and understanding? Get strategies to help students develop and present their own solutions to problems involving time and money.

Mary M. Coakley
University of Massachusetts, Amherst
Deanna Bero
Wheaton Public Schools, Illinois
704/706 (Convention Center)

## 33 <br> Nuts about Number Lines

(3-5) Gallery Workshop
Help your kids make connections between numbers and concepts by using number lines. You will walk away with several number lines that can deepen students' understanding of number. Come and learn how to teach the visual connection between fractions, decimals, percents, and money with this inexpensive, hands-on approach.

## Susan A. Hohstadt

Lawton Public Schools, Oklahoma
Stephanie A. Bowman
Lawton Public Schools, Oklahoma

$$
\text { Mile High } 4 \text { C/D (Convention Center) }
$$

## 34

## The Quadrillateral Hierarchy in the Common Core State Standards

(3-5, Preservice and In-Service) Gallery Workshop
Standards related to or involving the classification of quadrilaterals begin in grade 2 and continue through grade 5 in the Common Core State Standards. Investigate the big ideas in this progression as well as the role of definition in mathematics through hands-on activities involving quadrilateral cutouts, Venn diagrams, and geoboards.
Robin O'Dell
Buffalo State College, New York
Nirmala Nutakki
Buffalo State College, New York
503/504 (Convention Center)

## 35 <br> Base-Ten Blocks and Fractions to Beginning Algebra: Unifying Computational Algorithms <br> (3-8) Gallery Workshop

We will extend conceptually based computational models/algorithms found in grade schools to beginning algebra by using baseten blocks to develop algorithms used by elementary students and then using algebra tiles to develop the analogous algebraic algorithms. Similarly, we will tie algebraic algorithms to those involving fractions.

Marvin E. Harrell<br>Emporia State University, Kansas<br>Elizabeth G. Yanik<br>Emporia State University, Kansas<br>Nancy Smith<br>Emporia State University, Kansas

Mile High 3 C (Convention Center)

## 36 <br> LEAP into SMART Notebook: Lessons, Explorations, Activities, Play

(3-8) Gallery Workshop
Are you using your SMART Board to its full potential? Learn to create games and lessons that enhance your teaching and address both Content and Process Standards. Explore gallery items and math tools, the recorder, an IPEVO camera, the screen capture tools, and basic functions of SMART Notebook. Leave with ideas and templates you can use on Monday.
Ginalouise Palermo
Cattaraugus-Allegany BOCES, Olean, New York
Alyse Jennifer Sciolla
Council Rock School District, Newtown, Pennsylvania
Anna LaForgia
Council Rock School District, Newtown, Pennsylvania
Four Seasons 4 (Convention Center)

## 37 <br> Reasoning to Develop Number Sense with Fractions

## (3-8) Gallery Workshop

Do your students have strong number sense with fractions? Do they use this number sense to reason about fractions, solve problems, and determine whether answers to fraction problems make sense? We will engage in classroom-tested, hands-on activities that help students reason about fractional quantities and develop number sense with fractions.

## Nancy K. Mack

Grand Valley State University, Allendale, Michigan
103/105 (Convention Center)

## 38 <br> Smarter Together: Collaboration and Equity in the Elementary Math Classroom <br> (3-8) Gallery Workshop

As classrooms become more diverse, teachers must find ways to support all students in learning rigorous mathematics. However, ideas about who is smart can limit the participation of some students and affect access to rich math ideas for all. We will show how to design tasks so that even reluctant students can contribute and learn mathematics.

## Marcy Britta Wood

University of Arizona, Tucson
Joy A. Oslund
University of Michigan, Ann Arbor
104/106 (Convention Center)

## 39 <br> Understanding Fractions: One of the Gifts from the Common Core State Standards

## (3-8) Gallery Workshop

Why are fractions so difficult? Explore fractions from a developmental perspective. Using tools to support students' conceptual understanding, we will investigate different procedures. See how to use students' understanding of multiplication and division of whole numbers to connect those operations involving fractions.

## Kit Norris

Consultant, Southborough, Massachusetts
Mile High 1 E/F (Convention Center)

## 40

## And the Area Is . . . Because!

## (6-8) Gallery Workshop

Examine the spatial concept of area by using paper folding and grid paper to create convincing picture proofs. We will then arrive at an unfamiliar formula that requires investigation versus memorization, thus challenging all students regardless of prior knowledge. Problem solving beyond drill and practice is guaranteed.

## Kathleen M. Fick

Methodist University, Fayetteville, North Carolina
Nicola D. Edwards-Omolewa
Delaware State University, Dover
Centennial Ballroom A (Hyatt Regency)

## 41 <br> Integers on the Number Line: A Common Core State Standards-Based Approach <br> (6-8) Gallery Workshop <br> Explore adding and subtracting integers on the number line. Learn approaches that are tactile, visual, and sense making to help you move forward into a Common Core State Standards world. Activities are connected to the Common Core State Standards and the Standards for Mathematical Practice. <br> Mark Goldstein <br> Center for Mathematics and Teaching, Los Angeles, California

 406/407 (Convention Center)
## 42 <br> Median-Statistical and Geometric: How Are They Related? <br> (6-8) Gallery Workshop <br> Using manipulatives and drawings, we will develop reasoning connecting statistical mean and median with the intersection of medians in geometric planar figures. We will also address applications to centers of balance (architecture and toys) and to centers of population.

## Leora R. White

Nampa Schools, Idaho
Danielle D. Desjarlais
Nampa Schools, Idaho
Mineral Hall A-C (Hyatt Regency)

## 43 <br> Menu of Pythagorean Delights

## (6-8) Gallery Workshop

Two middle school teachers and a curriculum consultant in mathematics share their experiences in a three-year series of professional development that focuses on teaching for understanding, problem-based instructional tasks, meaningful and purposeful distributed practice, and assessment for learning.

## Amy L. Keller

Grant Wood Area Education Agency, Cedar Rapids, Iowa
Brenda Willis
Clear Creek Amana CSD, Tiffin, Iowa
Beth Hahn
Clear Creek Amana CSD, Tiffin, Iowa
708/710/712 (Convention Center)

## 44

## Middle School Math: Turn It On

(6-8) Gallery Workshop
Experience the journey that the students at Lakeside Middle School have been on for the past two years. Explore mathematics with the graphing calculator, covering topics ranging from fractions to growth rates to investigating rates of change. Take away classroom-tested activities that will put student thinking first.

Christi Fricks<br>Lakeside Middle School, Anderson, South Carolina<br>Jennifer North Morris<br>Consultant, Tucson, Arizona

403/404 (Convention Center)

## 45

## The Importance of Being Prime:

## Helping Students Understand

 Number Theory(6-8, Preservice and In-Service) Gallery Workshop
Explore a variety of hands-on classroom tasks aimed at developing students' conceptual understanding of factors, multiples, primes, composites, greatest common factor, and least common multiple. We will discuss prime factorization, which holds the key to helping students make sense of these ideas.

## Ziv Feldman

Boston University, Massachusetts
Mineral Hall D/E (Hyatt Regency)

## 46 <br> Collecting Live Data in Fathom

## (6-12) Gallery Workshop

Collect live data in Fathom by using Vernier temperature probes and motion detectors. Plot functions to fit your data by using sliders to adjust function parameters. Try collecting data to match precreated graphs. Discuss how interacting with live data helps students understand rates of change, function rules, and parameters. Discuss classroom scenarios.

## Tyler Pulis

North Carolina State University, Raleigh
Blake Whitley
North Carolina State University, Raleigh

## Hollylynne Lee

North Carolina State University, Raleigh
110/112 (Convention Center)

## 47 <br> Coordinate Plane Transformations: Have You Got the Right Image? <br> (6-12) Gallery Workshop <br> Explore strategies that use manipulatives and the TI-Nspire Navigator to engage students in generalizing the pattern of sets of ordered pairs under various transformations. After exploring the image of a geometric figure, you will create a picture and its image under a variety of transformations. <br> Margaret Bambrick <br> Volusia County Schools, DeLand, Florida <br> Ruth Casey <br> Teachers Teaching with Technology, Frankfort, Kentucky

Mile High 3 A (Convention Center)
 Workshop

## 48

## M\&M's Statistics: Teaching Common Core State Standards with M\&M's Candies <br> (6-12) Gallery Workshop

The Common Core State Standards require students in grades 6-12 to describe and interpret data, make inferences, and use probability to draw conclusions. Learn to introduce these ideas with a bag of M\&M's. Whether you teach AP Statistics or incorporate the Common Core State Standards in a non-AP course, you can teach statistics with chocolate. (Caution: this presentation may contain nuts.)
Jason M. Molesky
Lakeville Area Public Schools, Minnesota
Doug Tyson
Central York High School, York, Pennsylvania
Centennial Ballroom E (Hyatt Regency)


#### Abstract

49 Carrots before Horses, a.lk.a. Experience before Formalization (9-12) Gallery Workshop "Students need a chance to grapple with mathematical situations and discover key ideas for themselves. Experience-intuition-formalization: this is the sequence that leads to proof." This presentation will provide hands-on grappling experiences that will lead to intuition and finally to formalization. We will use Nspire and old-fashioned techniques.

\section*{Cindy M. Percival}

Roosevelt High School, Des Moines, Iowa

\section*{Jeffrey Marks}

Roosevelt High School, Des Moines, Iowa


111/113 (Convention Center)

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## 50 <br> Looking at Functions from Multiple Perspectives

(9-12) Gallery Workshop

Experiment with activities that challenge students to examine functions numerically, graphically, symbolically, and verbally.

## Kay A. Wohlhuter

University of Minnesota, Duluth
506/507 (Convention Center)

# 51 <br> Mind-On Projects Introducing Multiple Representations of Linear and Exponential Functions <br> (9-12) Gallery Workshop <br> Explore a classroom-tested, inquiry-based project introducing linear and exponential functions based on the Standards for Mathematical Practice from the Common Core State Standards. You will engage in the project and will get access to several more projects and resources. I will present a Geometer's Sketchpad file summarizing/illustrating key project ideas. 

## Jack L. Jackson

University of Arkansas-Fort Smith
Mile High 2 B (Convention Center)

## 52

## NASA's Exploring Space

 through Geometry(9-12) Gallery Workshop
And we have liftoff. We will introduce you to geometry lessons created from real data based on NASA's human spaceflight projects. The problems were developed by math educators who collaborate with scientists and engineers. Students will be inspired by the opportunity to analyze real data.

## Paulette Granger

NASA Johnson Space Center, Houston, Texas

## Natalee Lloyd

NASA Human Research Program Education and Outreach, Houston, Texas

Mile High 1 A/B (Convention Center)

## 53 <br> Teaching Polynomial and Rational Functions with CAS

(9-12) Gallery Workshop
Zeros and factors, end behavior, maxima/minima, asymptotes, and limits: these properties of polynomial and rational functions don't take a long time to teach when we use the TI-Nspire CAS handheld. Learn activities that avoid the pitfalls of student inaccuracies that keep students from getting the most of the learning goals of precalculus.

## Scott Galson

Chicago Public Schools, Illinois
Michael Caines
Chicago Public Schools, Illinois
603 (Convention Center)

## 54 <br> Exploring Modular Arithmetic in Precalculus, Calculus, and Discrete Mathematics

(9-12, Preservice and In-Service) Gallery Workshop
Modular arithmetic enables one to solve diverse mathematical problems. Explore patterns in recursive sequences with regard to their divisibility and periodicity, forming patterns in derivatives of trigonometric and other transcendental functions, and view powers of $i=$ SQRT [-1] with the aid of the TI-89 CAS.

## Jay L. Schiffman

Rowan University, Glassboro, New Jersey
607 (Convention Center)

## 54.1 <br> Math Teachers Are Reading Teachers, Too?

(9-12, Preservice and In-Service) Gallery Workshop
Difficulties in mathematics often stem not from procedural or conceptual misunderstandings but from difficulties in reading comprehension. Get classroom-ready strategies and best practices to ensure that your students are numerate and literate. (Great for English language learners and students with limited English proficiency.)

Jacqueline Foss<br>YES Prep Public Schools, Houston, Texas<br>Centennial Ballroom G/H (Hyatt Regency)

> 8:30 A.M.-9:30 A.M.

## 54.2 ew <br> Math for Students with Mild, Moderate, and Severe Disabilities <br> (General Interest) Exhibitor Workshop <br> Equals Mathematics curriculum is aligned to standards for students with mild, moderate, and severe disabilities. Learn about the methods, skills, and differentiation in Equals. Hear about the next strand in prealgebra and pregeometry as well as the latest new, exciting research data. Attendees will receive a differentiated instruction guide.

## AbleNet

Roseville, Minnesota
303 (Convention Center)

## 54.3 ew <br> enVisionMATH Common Core: Let's Take a Look at Rigor

(K-5) Exhibitor Workshop
Experience how the instructional design of enVisionMATH Common Core provides a high cognitive level of core instruction that supports the three aspects of rigor: conceptual understanding, procedural skill and fluency, and applications.

## Pearson

Upper Saddle River, New Jersey
301 (Convention Center)

## 54.4 ew

## Teaching Developmentally and the Common Core State Standards

(General Interest) Exhibitor Workshop
Explore how teachers can help all pre-K-8 learners make sense of math by supporting their own mathematical understanding and cultivating effective planning and instruction.

## Pearson

Upper Saddle River, New Jersey
302 (Convention Center)

### 54.5 CW

## Sneak Peek! Look What's New in K-5 Mathematics

## (Pre-K-5) Exhibitor Workshop

The new edition of Math Trailblazers provides dynamic delivery of mathematical content and strong, embedded assessment specifically designed to address and meet the new Common Core State Standards (CCSS). Get a sneak peek at its new digital format and learn how the fourth edition can help you meet the CCSS mathematical practice and content standards.

Kendall Hunt Publishing Co.
Dubuque, lowa
304 (Convention Center)

9:30 A.M.-10:30 A.M.

## 55 LSR

## Get Your Students to Reason More in Math Class

Learn $\leftrightarrow$ Reflect Kickoff Session
(General Interest) Session

## President Series Presentation

Explore "Fran's Top 5," a set of reasons to enhance students' opportunities for reasoning in math class. Take part in discussions guided by video clips of students as they reason through mathematical problems, student work samples, and research findings about student reasoning.

## Fran Arbaugh

Association of Mathematics Teachers Educators, Pennsylvania State University, University Park

Four Seasons 1 (Convention Center)

## 56 <br> Historical Topics in Mathematics: Pascal's Triangle and Pyramid <br> (General Interest) Session

The Chinese knew Pascal's triangle 500 years before he lived. Explore the Chinese triangle, Pascal's triangle, and Pascal's pyramid. Topics include even and odd numbers, binomial expansions, the Fibonacci sequence, trinomial expansions, the Sierpinski triangle, volume, layers, height, slant height, surface area, and more.

## Jim Fulmer

University of Arkansas at Little Rock

## Lowell Lynde

University of Arkansas at Monticello
Mile High 1 C/D (Convention Center)

## Check out the Presentation Spotlight stage in the BuzzHub-just one of many exciting offerings in the BuzzHub!

## Presentation Spotlight Schedule <br> LOCATED IN THE BUZZHUB IN THE CENTER OF THE EXHIBIT HALL. ALL PRESENTATIONS ARE 15 MINUTES. PRESENTATIONS ARE SUBJECT TO CHANGE. Thursday, April 18 <br> 9:25 a.m. Research Brief: Discussion—Benefits and Strategies <br> 9:50 a.m. Free Online Resources for Elementary School <br> 10:15 a.m. Free Apps for Teaching Elementary Math with the Common Core <br> 10:40 a.m. Get Published <br> 11:05 a.m. Be a Journal Referee <br> 11:30 a.m. Avoid Writing Pitfalls <br> 11:55 a.m. Research Brief: Students' Understanding of Ratio and Proportion <br> 12:20 p.m. Using NCTM's Free Reflection Guides as a Resource for Professional Development <br> 12:45 p.m. Online Math Games to Build Understanding <br> 1:10 p.m. Get Published <br> 1:35 p.m. Be a Journal Referee <br> 2:00 p.m. Avoid Writing Pitfalls <br> 2:25 p.m. Meet MOTO: NCTM's New Digital Curriculum for Grades K-2 <br> 2:50 p.m. Need Funding? The Buzz about MET (Mathematics Education Trust) <br> 3:15 p.m. Twitter \#MathChat <br> 3:40 p.m. To be determined

Friday, April 19
10:30 a.m. Get Published
10:55 a.m. Be a Journal Referee
11:20 a.m. Avoid Writing Pitfalls
11:45 a.m. Online Math Games to Build Understanding
12:10 p.m. Meet MOTO: NCTM's New Digital Curriculum for Grades K-2
12:35 p.m. Using NCTM's Free Reflection Guides as a Resource for Professional Development
1:00 p.m. Free Online Resources for Middle School
1:25 p.m. Free Apps for Teaching Middle School with the Common Core
1:50 p.m. Get Published
2:15 p.m. Be a Journal Referee
2:40 p.m. Avoid Writing Pitfalls
3:05 p.m. Free Apps for Teaching Elementary School with the Common Core
3:30 p.m. Tweet Your Journal: Learn. Share. Connect.
3:55 p.m. Free Apps for Teaching Middle School with the Common Core
4:20 p.m. Classroom-Ready Mathematically Rich Activities-Free
4:45 p.m. Meet MOTO: NCTM's New Digital Curriculum for Grades K-2
5:10 p.m. To be determined

## Saturday, April 20

9:30 a.m. New Teacher? This Facebook Group Is Just for You
9:55 a.m. Using NCTM's Free Reflection Guides as a Resource for Professional Development
10:20 a.m. Free Online Resources for High School
10:45 a.m. Need Funding? The Buzz about MET (Mathematics Education Trust)
11:10 a.m. Classroom-Ready Mathematically Rich Activities-Free

## 9:30 A.M.-10:30 A.M.

## 57

## Improving Student Understanding and Engagement with Technology

(General Interest) Session
Join Emmy-nominated actress, teacher, and real-life neuroscientist Mayim Bialik and T3 instructor Tom Reardon as they show the power of math classroom technology-from prealgebra through calculus and statistics-by incorporating TI-Nspire CX technology and software into your lessons to bolster students' conceptual understanding of math.

## Mayim Bialik

Actress, Neuroscientist, and Texas Instruments Spokesperson, Los Angeles, California

## Tom Reardon

Youngstown State University, Ohio
Four Seasons 2/3 (Convention Center)

## 58 <br> Math Matters: TIIPS and Tools for Practices and Problem Solving

(General Interest) Session
Explore the TIPS (think-ink-pair-share) and tools (materials) that matter most in math instruction to develop students' mathematical practices and problem-solving skills in using representations, routines, and reasons.

## Mari M. Westerhausen

Edison Elementary-PESD 1, Phoenix, Arizona Mile High 4 A/B (Convention Center)

## 59

## Vision to Action Leadership: Growth, Responsibility, and Accountability

(General Interest) Session
What are we doing as mathematics leaders to identify and nurture emerging teacher leaders? As a mathematics education community, we have a responsibility to help each other build capacity and to offer professional mathematics learning and support. Explore concrete ways to help teachers and leaders build knowledge and influence.

## Suzanne Mitchell

National Council of Supervisors of Mathematics, Denver, Colorado
Centennial Ballroom F (Hyatt Regency)

## 60 <br> Common Core State Standards Lessons and Activities Based on Great Literature

(Pre-K-2) Session
Good literature can offer many meaningful contexts for mathematics. A story can form connections to the variety of situations in which people use math for real purposes, make learning personal, and even make math fun. Come explore lesson plans and activities based on classic stories and characters, and the Common Core State Standards.

## M. W. Penn

Author, Hamden, Connecticut
107/109 (Convention Center)

## 61 <br> Getting Number Bonds to Stick Like Glue <br> (Pre-K-2) Session

Inspired by the highly successful strategies from Singapore, this session will focus on high-interest and engaging concrete, pictorial, and abstract tasks that lead to genuine understanding and recall of the critical number combinations up to ten. These activities are appropriate for whole groups, small groups, and centersand they are kid approved.

## Catherine Kuhns

Country HIlls Elementary, Coral Springs, Florida
Mineral Hall F/G (Hyatt Regency)

## 62 <br> Two-Step Story Problems in Operations and Algebraic Reasoning, Grades K-2 <br> (Pre-K-2) Session

Any story can cause young students to struggle. Standard 2.OA.1 expects students to represent and solve two-step story problems. Learn about the various structures involved in two-step word problems and walk away with ideas about how to scaffold student experiences for success.

## Melissa Hedges

Mequon-Thiensville School District, Mequon, Wisconsin
Beth Schefelker
Milwaukee Public Schools, Wisconsin

Mile High 4 E/F (Convention Center)

9:30 A.M.-10:30 A.M.

## 63 RA <br> Developing Algebraic Thinking in Elementary School

(Pre-K-5) Session
Absorb research-based knowledge about the development of children's algebraic thinking and ways to support that thinking in elementary school classrooms. I will share examples from teachers' classroom practice.

## Megan Franke

University of California, Los Angeles
203 (Convention Center)

## 64

## Meeting the Common Core

State Standards's Math Fact Fluency Challenge
(Pre-K-5) Session
Will your students be ready for computer-based tests that directly assess fact fluency via timed response items? This session summarizes the latest need-to-know research in math fact fluency and how it develops-or fails to develop-in elementary school students. I will present successful classroom techniques validated in large-sample studies.

Paul Cholmsky
ExploreLearning, Charlottesville, Virginia
Capitol Ballroom 4 (Hyatt Regency)

## 65

## Engaging Activities + Effective Instructional Strategies = Numerically Nimble Students

(3-5) Session
Improve students' numeric competence with strategies that promote greater sense making and student participation. Discover more effective ways to differentiate instruction and efficiently implement the Common Core State Standards. Generous handouts include engaging activities to enhance mathematical reasoning and improve students' number sense and computation.

## Leigh Childs <br> San Diego County Office of Education, California

501/502 (Convention Center)

## 66 <br> How Children's Literature Affects Students" Engagement during Mathematics Instruction

(3-5) Research Session

Discuss integrating children's literature in mathematics as a curricular approach that you can use to introduce various mathematical concepts. Children's literature not only provides a context for students; research suggests it may also improve academic engagement of students with challenging behaviors and mathematical difficulties.

## Jeremy Todd Whitney

University of Louisville, Kentucky
Amy Lingo
University of Louisville, Kentucky
405 (Convention Center)

## 67 <br> Exploring Multiple Ways to Multiply: Ideas to Engage All Learners <br> (3-5, Preservice and In-Service) Session <br> Learners who use only traditional algorithms to multiply may follow procedures in the absence of deep understanding. In the spirit of the Standards for Mathematical Practice, this session will introduce engaging representations of multiplication, including Ancient Egyptian, Russian Peasant, lattice, partial products, visual models, and memory aids. <br> William Lacefield <br> Mercer University, Atlanta, Georgia

Mile High 2 C (Convention Center)

## 68 <br> Don't Just Use Data: Consume, Critique, Care

(3-8) Session
Read the world through the lens of data. Use the context of texting in conjunction with data analysis to broaden students' perceptions of statistics. Generate, explore, and analyze textmessaging data. Scrutinize map charts that depict state rules on texting bans. Transition from being mere users of data to being caring, critical consumers of data.

## Nirmala Naresh

Miami University, Oxford, Ohio Workshop

9:30 A.M.-10:30 A.M.

## 69 <br> Developing a Growth Mindset in Struggling Math Students

(6-8) Session
Perseverance is the one Common Core State Standards math practice that weaves through all the others. It's also a key trait that many struggling students lack. For them, struggle leads to resignation. Get practical, research-based guidance on building a growth mindset-resilience, perseverance, and grit-in those students who need it most.

## David Dockterman

Harvard Graduate School of Education, Cambridge, Massachusetts 605 (Convention Center)

## 70

## Integrating Mathematics and English

 (6-8) SessionMany people think you're either an English person or a math person. Well, you can be both. Learn how to cover math and English standards by using research papers, vocabulary exercises, storytelling, and math articles. The approach is perfect for a summer school program.

Monique Renee Despres Hodziewich Saddle Mountain Unified School District, Tonopah, Arizona 705/707 (Convention Center)

## 71

## Proportional Reasoning? Creating Viable Arguments through Inquiry and Investigation

(6-8, Preservice and In-Service) Session
Explore effective strategies to give students a conceptual basis for promoting understanding of ratio concepts, relationships, and connections between proportional relationships, lines, and linear equations. Learn strategies to promote student understanding of these relationships through artifacts, modeling, questioning, and English Language Arts standards.

## Kathryn S. Williams

Jefferson County Public Schools, Louisville, Kentucky
Robyn Whelan
Jefferson County Public Schools, Louisville, Kentucky
703 (Convention Center)

## 72

## A Rationale for Irrationals: Convincing Students That Irrationals Exist

## (6-12) Session

Although $\pi$ often is students' first introduction to irrational numbers, we will explore an alternative activity for introducing and justifying the need for irrational numbers. Through an iterative process of generating increasingly better partitions of a number, we will engage in an unintended exploration of $e$.

## Nicholas H. Wasserman

Southern Methodist University, Dallas, Texas

> 401/402 (Convention Center)

9:30 A.M.-10:30 A.M.

## 73 <br> Fostering Discourse through Exploration with Technology <br> (6-12) Session

Classroom discourse is a key to developing deep understanding. With the right problems, exploring with technology can foster an environment filled with rich discussions and excited students. We will share two examples that can lead to dynamic discussions, engage your students, and develop their knowledge of big ideas.

## Bob Horton

Clemson University, South Carolina
Leigh Haltiwanger
Clemson University, South Carolina
Mile High 3 B (Convention Center)

## 74 RA

Algebraic Thinking When Solving Equations and Doing Word Problems (9-12) Session
What does it mean to think algebraically? We'll explore this question by looking at student solution strategies for solving particular equations and doing word problems. Research indicates that some solution strategies are common in algebra classrooms, and some are uncommon. We'll ask ourselves why.

## Daniel I. Chazan

University of Maryland, College Park
207 (Convention Center)

## 75 <br> Moneyball in the Classroom: Using Baseball to Teach Statistics (9-12) Session

As illustrated in the movie Moneyball, understanding the power of statistical analysis can be rewarding. Using a formula from the movie, we will learn how to make predictions, calculate residuals, and develop the concept of least squares. We will also use activities to explore regression to the mean and least-squares regression lines.

## Josh Tabor

Canyon del Oro High School, Oro Valley, Arizona
Capitol Ballroom 1-3 (Hyatt Regency)

## 76 <br> Exploring Sequences and Series through Multiple Representations

## (9-12) Session

The study of sequences and series can be introduced as early as algebra 1 . See how using multiple representations helps make the learning of sequences and series more engaging for students. Discover how to help students make connections with prior learning while laying the groundwork to study more advanced mathematics.

Richard L. Parr
Rice University, Houston, Texas
Anne Papakonstantinou
Rice University, Houston, Texas
Centennial Ballroom B/C (Hyatt Regency)

## 77

## I See It: The Power of Visualization

(9-12) Session
What does it mean to "see" the math? Taking concepts typically taught only symbolically, we'll explore tasks that can engage students to reason and make sense of mathematical concepts through visual representations. The nature of these tasks will include concrete patterning, dynamic graphing, geometric representation, and more.

## Marc Garneau

Education Services-Surrey School District, Canada
505 (Convention Center)

## 78 <br> Murder, Mirrrors, and Mythbusters: A Hands-On History of Conics <br> (9-12) Session <br> Was Tycho Brahe murdered? Did Archimedes use burning mirrors to repel Roman invaders? These questions offer motivating contexts to study conic sections. Develop the equations of conics through paper folding and string constructions, and enjoy historical vignettes related to conics.

Brian D. Sharp
Indiana University of Pennsylvania, Indiana, Pennsylvania
Mile High 2 A (Convention Center) Workshop Assessment

## 9:30 A.M.-10:30 A.M.

## 79 <br> Forensic Photography: CSI for the Eccentric(ity) <br> (9-12, Higher Education) Session

Our brain convinces us from experience that a round conference table observed from a distance actually has a circular tabletop. However, in a 2-D photograph taken from that perspective, the perimeter looks elliptical. Finally, a practical use of eccentricity. Learn to use photos forensically to deduce camera angles, lengths, and distances.

Mike Reiners
Christ's Household of Faith School, Saint Paul, Minnesota
702 (Convention Center)

## 80

## The Mathematics of "Angry Birds"

## (9-12, Higher Education) Session

We will use the popular game "Angry Birds" as motivation for explorations of projectile motion, focusing on parametric relations to develop a model for motion. The exploration will study how the variables of angle and initial velocity affect the graph, the motion, and the game. We'll check the results for motion in other images and video captures.

John J. Diehl
Retired, Hinsdale Central High School, Illinois
Ismael Zamora
Hinsdale South High School, Darien, Illinois
601 (Convention Center)

## 81

## A Research-Based Learning Progression for Beginning Algebra

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

A learning progression from equivalent expressions to solving linear equations was designed on the basis of research literature and later tested in a ninth-grade classroom. Explore research-based tasks, techniques, and theories to support students' change in representational fluency using CAS and paper and pencil as tools.

## Nicole L. Fonger

Western Michigan University, Kalamazoo
102 (Convention Center)

## 82 <br> Preparing for Your Institution's NCATE Program Review

(Higher Education) Session
Learn to navigate the NCATE/CAEP program review process and prepare the required documents. Get the latest information about the overall program review system and what is needed to prepare mathematics education program reports. We will explore report templates, 2003 program standards, newly approved 2012 program standards, and mistakes to avoid.

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Judy O'Neal
NCTM NCATE SPA Coordinator, Dahlonega, Georgia
    Centennial Ballroom D (Hyatt Regency)
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## 83 <br> Using Smartpens to Enhance Student Reasoning in a Proofs Course

(Higher Education, Preservice and In-Service) Session
Smartpens record students' thought processes as they work through proofs. Instructors use the saved pencasts to gain insight into student reasoning and make corrections if necessary. Such an approach is not possible with finished written work.

## Dan Radelet

Indiana University of Pennsylvania
Francisco Alarcon
Indiana University of Pennsylvania
709/711 (Convention Center)

## 84 <br> Will This Way Work? Preservice Teachers Validate Their Solution Strategies <br> (Preservice and In-Service) Session <br> Rich mathematical problems can lead to multiple solution strategies, each of which should be defended by its author. Explore examples of preservice K-8 teacher reasoning, spanning problems involving multiplication, proportional reasoning, statistics, discrete math, and geometry. <br> Dave Kennedy <br> Shippensburg University of Pennsylvania

108 (Convention Center)

## 9:45 A.M.-11:00 A.M.

## 85

## Building a Firm Foundation: Teaching for Depth of Understanding

(Pre-K-2) Gallery Workshop
The depth of conceptual understandings in the primary grades is vital to success in later grades. Examine the importance of our role in building a firm conceptual foundation for pre-K-16 success. We will focus on number and operations and the development of related language.

## Sandy Atkins

Creating AHAs, St. Petersburg, Florida
Mile High 1 E/F (Convention Center)

## 86

## Building Common Core State Standards Skills, One Cabin at a Time

## (Pre-K-2) Gallery Workshop

Lincoln Logs have been a popular construction toy. Using this interest and integrating math and social studies skills lays the groundwork for a Common Core State Standards in Mathematics lesson. Take a project from start to finish while learning the skills of counting money, making change, skip counting, addition, subtraction, and coordinate grids.
Cindy Cliche
McFadden School/Middle Tennessee State University, Murfreesboro

Mile High 3 A (Convention Center)

## 87

## Camping In: Math Style

(Pre-K-5) Gallery Workshop
Are you hiking through the world of mathematics looking for great ideas? Join us and camp in, math style. Hike to math trail posts (stations), complete rich problems in your camp journal, and earn your camp badges. Fill your backpack with great ideas for the classroom or a family math night. I will provide handouts and s'mores.

Kelli Shrewsberry
Teaching and Learning Collaborative, Columbus, Ohio
Mile High 2 B (Convention Center)

## 88

## Engaging Children with Number <br> Sense, Geometry, Problem Solving, and Discourse

(Pre-K-5) Gallery Workshop
Learn strategies, including use of manipulatives, to develop number sense, place value, estimation, geometry, and problem solving. I will demonstrate the power of mathematical discourse to develop concepts, reasoning, and mathematics vocabulary. I will engage attendees with hands-on activities.

## Donna L. Knoell

Consultant, Shawnee Mission, Kansas
Mineral Hall A-C (Hyatt Regency)

## 89

## Pattern and Place-Value Connections

## (Pre-K-5) Gallery Workshop

Explore engaging activities and instructional strategies using pattern to help students in grades 1-3 develop place-value understanding and number sense. Take home many ready-to-implement ideas to guide your students to conceptual understanding. See aha moments happen in your classroom.

## Susan Kunze

Bishop Unified School District, California
Michelle Kubiak
Bishop Unified School District, California
607 (Convention Center)

## 90 <br> Promoting Mathematical Reasoning, Validation, and Communication through Differentiated Learning Centers

(Pre-K-5) Gallery Workshop
Learning centers are a great way for students to explore number concepts, and they offer an opportunity for teachers to observe student thinking. Learn ways to encourage students to reason through mathematical situations, validate their thinking, and communicate their thoughts via differentiated, standards-based learning centers.

## Kris Jarboe

Kentucky Center for Mathematics, Highland Heights
Linda Montgomery
Morehead State University, Kentucky
111/113 (Convention Center)

9:45 A.M.-11:00 A.M.

## 91 <br> Fear Not the Fraction

(3-5) Gallery Workshop
Elementary-level students need experiences with multiple models of fractions to gain a deep understanding of the concept and proficiency with skills, such as finding equivalence and operating. We will explore which model is most appropriate for each purpose and will relate and classify all fraction types.

## James L. Burnett

ORIGO Education, St. Charles, Missouri
110/112 (Convention Center)

## 92 <br> From Seeing to Convincing: Language of Visual Reasoning and Proof <br> (3-5) Gallery Workshop <br> "I don't know how to explain it; I just see it!" Explore ways you can support students in developing the language of reasoning and proof in geometry and measurement. You will also examine grade-appropriate activities that will help students move from solving to proving their solutions to themselves and others.

## Polina Sabinin

Bridgewater State University, Massachusetts
Capitol Ballroom 5-7 (Hyatt Regency)

## 93 <br> Crush Fractions with Technology: Show Me and II Get It

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

Technology affords us ways to represent fractions that supplement other resources and other modes of teaching, including hands-on fraction models, pictorial representations, and symbolic number work. You will take away free printed manipulatives and resources to reinvigorate your teaching of fractions.

## Peter S. Price

Educator, Sheldon, Australia
708/710/712 (Convention Center)

## 94 <br> Making Our Base-Ten System Concrete and Comprehensible

(3-5, Preservice and In-Service) Gallery Workshop
The foundation of mathematics is a conceptual understanding of our base-ten system. Such groundwork includes identifying numerals used in base ten, connecting symbolic representations of the number 10 with concrete representations, and switching bases to more fully understand the challenges students face in the classroom.

## Stacy K. Keller Boote

University of North Florida, Jacksonville
406/407 (Convention Center)

## 95 <br> Connecting Fractions, Measurement, and Number Lines with Manipulatives and Technology <br> (3-8) Gallery Workshop <br> Use hands-on manipulatives and technology to build meaning for fractions and the number line from length measurement, addressing the Common Core State Standards's treatment of these topics. We will also address research on student understanding about length measurement and number lines. <br> Nicholas J. Gilbertson <br> Michigan State University, East Lansing <br> D. Lee Clark <br> Michigan State University, East Lansing <br> Jia He <br> Michigan State University, East Lansing <br> 403/404 (Convention Center)

Pick up a copy of the on-site Daily News for up-to-date conference information

## 96

## Mathematics Coaches Need Professional Development Too

(3-8) Gallery Workshop
To increase their effectiveness, mathematics coaches need professional development that increases their mathematics content and coaching knowledge. Participate in hands-on activities in number and operations content that are hard to teach and in activities to increase your own coaching knowledge.

## Arlene P. Mitchell

RMC Research Corporation, Denver, Colorado
Elizabeth Burroughs
Montana State University, Bozeman
Clare E. Heidema
RMC Research Corporation, Denver, Colorado

> 506/507 (Convention Center)

97
Properties of Quadrilaterals: Helpful Tips for Teaching and Learning
(3-8) Gallery Workshop
More than 70 percent of grades $4-8$ students (NAEP 2009, 2011) failed the items related to properties of quadrilaterals. This topic is crucial for students' success in geometry and measurement. We will give you math activities about quadrilaterals and their properties, as well as develop lesson ideas to take back.
Aina K. Appova
Ohio State University, Columbus
Tetyana Berezovski
St. Joseph's University, Philadelphia, Pennsylvania
503/504 (Convention Center)

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 A new math game by Ron LarsonExplore the game at www.MyDearAuntSally.com


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GAME FEATURES:
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- Whole Numbers
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- Fractions
- Rational Numbers
- $300+$ difficulty levels


Visit the Big Ideas Math booth \#1630 for more information on this exciting, new game!

NCTM Committe Presentation

## 9:45 A.M.-11:00 A.M.

## 98 <br> Unpacking Geometry Problems from Boxes You Create

## (3-8) Gallery Workshop

Transform greeting cards into boxes while discovering the properties and concepts to solve related problems. We will make predictions and conjectures about parallelograms, rectangles, squares, and other quadrilaterals. We will explore ratio, proportion, area, and volume, along with nontraditional problems to bring back to the classroom.

Nicholas J. Restivo
Mathematical Olympiads for Elementary and Middle Schools, Bellmore, New York

> 104/106 (Convention Center)

## 99

Analyzing a Progression of Proportional Reasoning Strategies
(6-8) Gallery Workshop
Proportional reasoning is a key feature of the middle school Common Core State Standards for Mathematics. Using information from the research base and the Common Core State Standards, we will construct a progression highlighting changes in student thinking from informal to formal understanding by sorting and ordering student thinking strategies, mathematical models, and word problems.

Michele B. Carney
Boise State University, Idaho
Gwyneth Hughes
Boise State University, Idaho
Mile High 1 A/B (Convention Center)

## 100 <br> Teaching and Assessing Statistical Reasoning Conceptually

(6-8, Preservice and In-Service) Gallery Workshop
Discuss the types of knowledge and thinking teachers need to develop to teach and assess statistics conceptually, as articulated in the Common Core State Standards. We will use examples from NCTM's Developing Essential Understanding of Statistics for Teaching Mathematics as well as the National Science Founda-tion-funded LOCUS project.

## Tim Jacobbe

University of Florida, Gainesville
Gary Kader
Appalachian State University, Boone, North Carolina
Christine Franklin
University of Georgia, Athens
603 (Convention Center)

## 101 <br> Connecting Geometry and Algebra through Reasoning and Proof

(6-12) Gallery Workshop
Experience hands-on activities through modeling that provide convincing arguments for justifying the reasoning for algebraic and geometric proofs.

## Lawrence Linnen

Metropolitan State University Denver, Colorado
Centennial Ballroom G/H (Hyatt Regency)

## 102 <br> Let's Go Bungee Jumping <br> (6-12) Gallery Workshop <br> Develop a mathematical model (an equation) to describe the amount of stretch in a bungee cord of varying length. I will also share several other fun mathematical modeling activities ready for classroom use. <br> Shelton J. Ford <br> Fayetteville State University, North Carolina <br> Mile High 3 C (Convention Center)

9:45 A.M.-11:00 A.M.

## 103 <br> Making Cents of Common Core State Standards Statistics Standards

(6-12) Gallery Workshop
The Common Core State Standards require students to make inferences and justify conclusions from sample surveys, experiments, and observational studies. We will address this standard in a way that non-statistics teachers can implement. Through spinning pennies and simulations, see how to lead students in a statistical significance test.

## Doug Tyson

Central York High School, York, Pennsylvania
Jason M. Molesky
Lakeville Area Public Schools, Minnesota
201 (Convention Center)

## 104 <br> Multisensory Algebra: Building Solutions, Proof by Construction <br> (6-12) Gallery Workshop

Students benefit from using manipulatives that provide tactile kinesthetic links to abstract calculations. Construct models of algebraic functions to illustrate concepts and function solutions. We will model linear, quadratic, and exponential functions by using common objects and manipulatives. Focus will be on regular, learning disability, and English language learner classes.

Marilyn L. Zecher<br>The Multisensory Training Institute of The Atlantic Seaboard Dyslexia Education Center, Rockville, Maryland

Mile High 4 C/D (Convention Center)

105
Strategies to Engage Algebra
Learners: Puzzles That Promote Mathematical Reasoning
(6-12) Gallery Workshop
Algebra students, accelerated or struggling, need engaging tasks that show that effort pays off as they learn, do, and enjoy mathematics. Puzzles are an ideal context to develop algebraic reasoning and problem-solving strategies. Come solve and design puzzles that improve algebraic understanding, intuition, logic, confidence, and stamina.
Mary K. Fries
Education Development Center, Waltham, Massachusetts
Jane M. Kang
Education Development Center, Waltham, Massachusetts

## E. Paul Goldenberg

Education Development Center, Waltham, Massachusetts
Centennial Ballroom E (Hyatt Regency)

## 106 <br> Verify It: Using Technology Models <br> (6-12) Gallery Workshop <br> We will share how you can use technology to give access to struggling and English language learner students, as well as enhance and extend content for the mathematically savvy student. Create simulations and geometric models to represent real-world activities such as skateboarding. Represent generated data algebraically. Make connections between symbols and quantities. <br> Kathleen McKinley <br> School District of Lancaster, Pennsylvania <br> Alwina Green <br> School District of Philadelphia, Pennsylvania

704/706 (Convention Center)

## 107 <br> Where Do Those Polygon Area Formulas Come From?

(6-12) Gallery Workshop
Participate in hands-on derivations of area formulas for polygons such as parallelograms, triangles, trapezoids, and more. We believe students will retain the area formulas longer if they can derive them.

Betty B. Long
Appalachian State University, Boone, North Carolina
Deborah A. Crocker
Appalachian State University, Boone, North Carolina
103/105 (Convention Center)

# SAT Subject Tests" = Opportunity 


9:45 A.M.-11:00 A.M.

## 108 <br> Access Proof through Geometric Models

## (9-12) Gallery Workshop

Use origami, constructions, and 3-D models to illustrate proofs of geometric theorems. Provide access for English language learners and special education students. Receive proven lessons that bring access to deductive reasoning to your classroom. Discuss the implications of the Common Core State Standards for Mathematics in transforming the geometry classroom.
Frank A. Carrillo
Central Region High School \#16A, Los Angeles, California
Mineral Hall D/E (Hyatt Regency)

## 109 <br> Exploring AP Calculus with Colorful Calculator Investigations <br> (9-12) Gallery Workshop <br> Explore activities involving limits, derivatives, and integrals through engaging hands-on activities and graphing calculators with enhanced color graphics. We will also use data collection devices as related to calculus topics.

## Sondra Dempsey

Oxford City School System, Alabama
Deedee Stanfield
Oxford City School System, Alabama
Centennial Ballroom A (Hyatt Regency)

## 110 <br> How Do You Use Statistical Reasoning to Formulate Convincing Conclusions?

(9-12) Gallery Workshop
Engage in problem-based, student-centered tasks that exemplify Common Core State Standards. Using participant-collected data, we will use simulations and graphical displays to help decide whether differences between treatment means are significant. Bring your own laptop to use the free apps in Core Math Tools, available at the NCTM website.
Beth E. Ritsema
Western Michigan University, Kalamazoo
Alden J. Edson
Western Michigan University, Kalamazoo
Four Seasons 4 (Convention Center)

10:00 A.M.-11:00 A.M.

## 110.1 ew <br> Summing It Up: What We Know About the New Assessments <br> (General Interest) Exhibitor Workshop

New assessments aligned with the Common Core State Standards (CCSS) will be available online in 2014-2015. Learn about the assessment approach of the Partnership for Assessment of Readiness for College and Careers (PARCC) and what mathematics educators can expect to see in the new assessments.

## Pearson

Upper Saddle River, New Jersey
301 (Convention Center)

## 110.2 ew

## Mathematical Coaching in the Era of the Common Core <br> (General Interest) Exhibitor Workshop

For mathematics coaches and teacher leaders, this session will share the most effective tools and activities for coaching for professional learning-all designed to help shift classroom practice in ways that nurture the development of the Common Core State Standards Mathematical Practices.

## Pearson

Upper Saddle River, New Jersey
302 (Convention Center)

## 110.3 ew

## Cracking the Code of Algebra without Cracking One's Head

## (3-8) Exhibitor Workshop

How does Hands-On Equations enable 80\% of inner-city fourth graders to succeed with such basic equations as $4 x+3=3 x+9$ ? If algebra is a foreign language to your students, this session is for you.

## Borenson and Associates

Allentown, Pennsylvania Workshop

## 10:00 A.M.-11:00 A.M

## 110.4 <br> Moving Math Forward in the Middle Grades

(6-8) Exhibitor Workshop
Help your students gain a deeper understanding of mathematics in the middle grades with Math Innovations. The research-based curriculum provides a student-centered approach that balances concept and skill development as students broaden their conceptual understanding of mathematics.

Kendall Hunt Publishing Co.
Dubuque, lowa
304 (Convention Center)

## 11:00 A.M.-12:00 P.M.

## 111 <br> Clueless: Unintended Consequences of Teaching Clues/Keys for <br> Solving Problems

(General Interest) Session
Sometimes our efforts to help students deal with word problems actually obstruct mathematics learning. Developing mathematical habits of mind has to go beyond translating words and looking for clues. How can we help all students look past translation and learn to think about the mathematics in a problem?
Cathy L. Seeley
Past President, National Council of Teachers of Mathematics; Charles A. Dana Center at the University of Texas at Austin

Four Seasons 1 (Convention Center)

## 112 <br> Dynamic Math Leadership: How Can We Promote It?

(General Interest) Session
We will present several leadership frameworks in order to explore options for how you can sustain or improve your leadership potential and relationship with others, as well as encourage others to assume leadership positions. Engage in activities to help your team, organization, and department work together more effectively.

NCTM Affiliate Services Committee
National Council of Teachers of Mathematics, Reston, Virginia
207 (Convention Center)

## 114 BA

## K-16 Algebraic Thinking:

A Mathematical Perspective
(General Interest) Session
Research on algebraic thinking has grown considerably in recent years. Explore research findings from the perspective of mathematics, using the Common Core State Standards for Mathematical Practice as a lens.

## Mark Driscoll

Education Development Center, Waltham, Massachusetts
205 (Convention Center)

## 11:00 A.M.-12:00 P.M.

## 115 <br> Singing Out about Ongoing Challenges in Teaching Mathematics

(General Interest) Session
Reflect on integrated mathematics, transition paths from high school to college mathematics, cultural attitude toward mathematics, the Common Core State Standards, the hard work and commitment of mathematics teachers, and other current issues. Join us as we inform, provoke, and entertain on big issues through the medium of music.

## J. Michael Shaughnessy

Past President, National Council of Teachers of Mathematics; Portland State University, Oregon

## Judi Zawojewski

Illinois Institute of Technology, Chicago
Centennial Ballroom D (Hyatt Regency)

## 116 <br> Teaching Mathematics to English Language Learners: Going Beyond Good Teaching

(General Interest) Session
What strategies must we use to ensure that English language learners (ELLs) have access to high-quality mathematics and the opportunity to develop necessary mathematical practices and language? I will use video clips and cases to highlight K-12 strategies and instructional tools that are effective in teaching ELLs at the various stages of language development.

## Nora Ramirez

Nora Ramirez Consulting, Tempe, Arizona
Capitol Ballroom 4 (Hyatt Regency)

## 117 L6R <br> Measuring Length and Time in the Common Core State Standards, Grades K-1

(Pre-K-2) Session
For measuring length, the Common Core State Standards requires that first graders be taught transitivity and the need for equal units. This teaching is unnecessary because Piaget reported in 1948 that, without any instruction, children demonstrate transitivity by grade 2 and unit iteration after grade 3 . The Common Core State Standards also confuses measuring time with telling time.

## Constance Kamii

University of Alabama at Birmingham
709/711 (Convention Center)

## 118 L됴 <br> Developing "Math Sense": Pre-K-Grade 2 Students Make Sense of Mathematics

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

We will share tasks designed to help pre-K-grade 2 students engage in mathematics, focusing on Standard 1: making sense of problems and persevering in solving them. We will also share considerations for effective implementation and examples of student work. Join us to see how pre-K-grade 2 students can develop these important practices.

## Johnna Bolyard

West Virginia University, Morgantown
Sarah Selmer
West Virginia University, Morgantown
Lauren LaRosa
West Virginia University, Morgantown
705/707 (Convention Center)


# 119 <br> Elementary Teachers' Learning, Understanding, and Classroom Use of Learning Progressions <br> (Pre-K-5) Research Session <br> In the National Science Foundation-funded Cognition-Based Assessment project, twenty-seven teachers studied-and used in their classrooms-an integrated system of research-based learning progressions, assessment tasks, and instructional materials. I will describe ways that teachers learned, understood, and used these materials throughout five years of the project. 

Michael T. Battista
Ohio State University, Columbus
Mile High 2 A (Convention Center)

## 120 IER <br> Classroom Norms to Support Student Reasoning and Proof

(3-5) Session
Learn how one fourth-grade teacher creates classroom norms that promote student-centered reasoning and proof. The presentation will include video examples of student interactions, insights from the classroom teacher, and a handout offering suggestions for teachers wanting to create similar settings for their own students.

## Michele Heron

Kent State University at Stark, North Canton, Ohio

## Lisa Host

New Philadelphia City Schools, Ohio
107/109 (Convention Center)

## 121 ICB

How Do You Know? Teaching Children to Reason Mathematically
(3-5) Session
Explore student-tested ideas for activities that help elementary-age children learn to reason mathematically. Learn strategies you can use to ask questions and create tasks to strengthen students' abilities to use the mathematical processes of reasoning and proving.
Elaine A. Tuft
Utah Valley University, Orem

## 123

Building After-School Programs: Playing with Mathematics to Reinforce Number Sense
(3-5, Preservice and In-Service) Session
Explore a university/K-5 after-school program designed to enhance the number sense of students and the competency of preservice teachers. Attendees will learn steps to create a similar program, unique features of the math methods course tied to the program, and effective mathematical activities for at-risk/English language learner students.

## Elizabeth K. Ward

Texas Wesleyan University, Fort Worth
Elisabeth Johnston
Slippery Rock University, Pennsylvania
Mile High 4 E/F (Convention Center)

## 124 <br> Learning about Student <br> Understanding with the "Show Me" iPad App <br> (3-8) Session

Students' attention to precision, engagement level, and perseverance have increased with the use of iPads. I will share what I have learned about students' mathematical understanding during response-to-intervention instruction. We will discuss students' recordings using the Show Me app and what can be learned from them.

## Jenny Jorgensen

Yarmouth School Department, Maine
203 (Convention Center)

## 125 <br> Lesson Learning from Interviews about Numerical Reasoning

(3-8) Session
Learning to reason numerically is essential for students' success with math. Learn about the specific strategies and understandings essential for numerical proficiency. Videotapes of student interviews illustrate the importance of emphasizing reasoning mentally.

## Marilyn Burns

Math Solutions, Sausalito, California
Four Seasons 2/3 (Convention Center)

## 126 <br> Considering Students" Ideas on Graphs of Linear Functions

(6-8) Session
We will analyze individual interviews where middle school students graphically represented stories about how three people save money over a year. Teachers and researchers analyze the influence of previous teaching and the relevance of findings for planning lessons on nonlinear functions.

## Analucia D. Schliemann

Tufts University, Medford, Massachusetts
Capitol Ballroom 1-3 (Hyatt Regency)

## 127 LOB

Pants on Fire
(6-8) Session
Learn how to incorporate justification, reasoning, and proof into your existing curriculum. You will discover simple, no-cost strategies and walk away with hints, blacklines, and classroom routines that will infuse your lessons with student opportunities to improve the Common Core State Standards mathematics practices of making arguments, justification, and proof.

Laura O. Godfrey
Madison Metropolitan School District, Wisconsin
505 (Convention Center)

## 128 <br> Pattern Block Frenzy: Proportional Reasoning with Technology

## (6-8) Session

Students often struggle with making sense of ratios and proportions. Learn how a group of sixth graders used virtual pattern blocks to develop proportional reasoning. Their work reveals a variety of creative solutions made possible by the dynamic nature of virtual manipulatives, worthwhile mathematical tasks, and rich classroom discussions.

Katie L. Anderson
Utah State University, Logan
108 (Convention Center)

## 129 ISR

Using Desirable Difficulties to Motivate Reasoning and Challenge Thinking

(6-8, Preservice and In-Service) Session

Being good at math is not evidenced by what you know, but by what you do when you don't know. Let's assist students in constructing and applying "new" knowledge in ways different from those in which it was first learned. Those who express reluctance to look at math in alternative ways may be signaling an unrecognized confusion that is already present.

## William R. Speer

University of Nevada, Las Vegas
401/402 (Convention Center)

## 130 <br> Exploring Students" Readiness to Learn Slope <br> (6-12) Session

Our formative assessment instrument was developed to be sensitive to common misconceptions about covariation and proportional reasoning that affect students' readiness to understand slope. We will share aspects of the assessment, our findings, and suggested activities to help you address these misconceptions.

## Angela Broaddus

Center for Educational Testing and Evaluation, University of Kansas, Lawrence

Susan Gay
University of Kansas, Lawrence
Centennial Ballroom F (Hyatt Regency)

## 130.1 <br> Removing Barriers to Reasoning and Sense Making in the Classroom

## (6-12) Session

Examine common shortcuts that misrepresent mathematics in the grades 6-12 curriculum. We will discuss how they limit students' ability to reason and make sense of mathematical concepts and how you can avoid using shortcuts to help students build a conceptual understanding of mathematical concepts.

## Daniel Ilaria <br> West Chester University, Pennsylvania <br> Centennial Ballroom B/C (Hyatt Regency)

## 131 LEB <br> How Do We Know What We Think We Know?

(9-12) Session
How much evidence do we require to believe a statement? How sure do we need to be to act on information? What role does time pressure play in our decision? We will explore different situations and consider the role of proofs, the Internet, and technology.

## Kurt Mederer

Greens Farms Academy, Westport, Connecticut

## Joel Padilla

Convent of the Sacred Heart, Greenwich, Connecticut

## Andrew M. Byrne

Darien Public Schools, Connecticut
405 (Convention Center)

## 132 <br> Using Problem-Based Learning Tasks to Foster Reasoning and Proof

## (9-12) Session

We will share teacher-designed problem-based learning (PrBL) mini-units grounded in the Common Core State Standards and Mathematical Practices. These mini-units typically take three to five instructional periods and can be a great way to foster students' reasoning and proof skills. We share design ideas, resources, and some of our units.

## Enrique Galindo

Indiana University, Bloomington

## Julie Evans

Bloomfield Junior/Senior High School, Indiana

## Jason Walton

White River Valley Junior/Senior High School, Switz City, Indiana Mile High 2 C (Convention Center)

## 133

## Calculus Animations with GeoGebra

## (9-12, Higher Education) Session

GeoGebra is a free, Web-based software that does dynamic geometry and graphing. The dynamic feature of the software allows for animations that can illustrate many topics in calculus. I will show some animations I have used as well as feature instruction on how to create animations that the audience suggests.

## Kevin W. Hopkins

Southwest Baptist University, Bolivar, Missouri

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\text { Mile High } 4 \text { A/B (Convention Center) }
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## 134 <br> Calculus In Motion: Improving Calculus Understanding through Interactive Computer Animations

## (9-12, Higher Education) Session

Explore interactive computer animations (Sketchpad) that bring calculus to life as the study of motion and change. When you pair animations with a reasoning-questioning teaching strategy, understanding soars because all students see it with their own eyes. Topics include limits, derivatives, integrals, related rates, volumes, and more.

## Audrey M. Weeks

Calculus in Motion, Burbank, California
Mineral Hall F/G (Hyatt Regency)

## 135

## Function Foundations

(9-12, Higher Education) Session
Functions are foundational for secondary mathematics and beyond. Yet, students often fail to move beyond a fragile understanding of this concept. I will present research-based and classroom-tested means to assess your students' thinking about functions and help them build more robust foundations on which to build future success.

Daniel J. Ross
Maryville College, Tennessee
102 (Convention Center)

## 11:00 A.M.-12:00 P.M.

## 136 LSR

## How to Prove Things

(9-12, Higher Education) Session
How do we prove claims in math? What strategies are available? When should we use each? This session offers a comprehensive guide to proof strategies, such as reductio ad absurdum and strong induction, and explains how to know which one to use. Leave with useful resources for teaching students how to prove things.
Stuart Gluck
Johns Hopkins University Center for Talented Youth, Baltimore, Maryland

Carlos Rodriguez
Johns Hopkins University Center for Talented Youth, Baltimore, Maryland

501/502 (Convention Center)


## 137 <br> Preparing Secondary-Level Math Teachers to Work with English Language Learners

(Higher Education, Preservice and In-Service) Session
Teachers are often unprepared to work with English language learners (ELLs) in high school math classrooms. An innovative, two-way, content-based instruction approach to building ELLs' language and content knowledge enables teachers to address the needs of this growing population of students through interdisciplinary teacher collaboration.

## Margo DelliCarpini

Lehman College, City University of New York, Bronx
Orlando B. Alonso
Lehman College, City University of New York, Bronx
601 (Convention Center)

## 138 <br> Mentor-Guided Lesson Study: Voices from the Field <br> (Preservice and In-Service) Session <br> Discuss effective mentoring of novice teachers, including a new form of prospective teacher development: mentor-guided lesson study. Learn about current research on implementing mentorguided lesson study and share your experiences and insights.

Jennifer L. Nimtz
Michigan State University, East Lansing
Kristen Bieda
Michigan State University, East Lansing
703 (Convention Center)

11:30 A.M.-12:00 P.M.

## 139 <br> Fraction Addition under the Common Core State Standards for Mathematics

(General Interest) Burst
Under the Common Core State Standards for Mathematics (CCSSM), which topics related to fraction addition will elementary teachers cover? Which skills can high school teachers hope that students will have already practiced? Within and beyond CCSSM, how can we teach addition of ratios of integers with methods that extend to ratios of polynominals? We will look at various perspectives.

## J. Bradford Burkman

Louisiana School for Math, Science, and the Arts, Natchitoches
506/507 (Convention Center)

## 140

## Is Graduate Study in Mathematics

 Education Right for You?(General Interest) Burst
If you have ever considered graduate study in mathematics education, then this informative presentation is for you. Learn about such details as program requirements, teaching and research opportunities, financial support, thesis/dissertation requirements, and future career options.

## Amy Ellis

University of Wisconsin-Madison

## Anita Wager

University of Wisconsin-Madison

## Eric Knuth

University of Wisconsin-Madison
704/706 (Convention Center)

## 141

Learning Online and Outdoors:
Integrating Geocaching into the Mathematics Classroom
(General Interest) Burst
Geocaching is a high-tech treasure hunt with many opportunities for mathematics education. From geospatial awareness to decryption, students use a variety of mathematical skills to find hidden treasures in the great outdoors. Alternatively, MathCaching websites award virtual treasures on the basis of content-specific capabilities.

## Lucy Bush

Mercer University, Atlanta, Georgia

## Jeffrey Hall

Mercer University, Atlanta, Georgia
Mile High 1 E/F (Convention Center)

## 142 m <br> MET Grants and Scholarships: <br> What They Are, How to Apply

(General Interest) Burst
Don't miss out. NCTM's Mathematics Education Trust (MET) supports teachers with funds for materials, development of lessons, conferences, courses, professional development and inservice, and action research. Learn what's available and how to apply. You'll hear tips for choosing the most appropriate award for you and enhancing your chances to win it.

Mathematics Education Trust
National Council of Teachers of Mathematics, Reston, Virginia
406/407 (Convention Center)

## 143

## PLC: The Practices, the Lessons, the Collaborative

(General Interest) Burst
Learn how you can bring the mathematical practices to life while crafting research lessons as a member of our online lesson study collaborative. This PLC values teachers as professionals and offers intellectually stimulating opportunities to increase math knowledge for teaching with a focus on student understanding

Hope M. Yursa
Drexel University, Philadelphia, Pennsylvania
Jason Silverman
Drexel University, Philadelphia, Pennsylvania Mineral Hall A-C (Hyatt Regency)

[^1]

Free, standards-aligned digital math resources from Texas Instruments ensure your teaching technology is working just as hard.

TI provides thousands of activities designed by educators and researchers to simplify lesson planning, enhance assessment and promote mastery of tough-to-teach/tough-to-learn concepts from middle grades to college.

In short, these resources help you get the most you can out of your TI technology.

Best of all, TI support and professional development are with you every step of the way so you can get your students to "I get it!"

Add up the benefits at Booth 217 today.


11:30 A.M.-12:00 P.M.

## 145 <br> Can Primary Students Really Defend Their Work in Mathematics? Yes.

(Pre-K-2) Burst
Learn three successful ways that young children can "argue" and "defend" their solutions to problems. These ways include number talks, pictures, and games. I will share student work, video, and students engaged in defending their work.

## Jean Morrow

Emporia State University, Kansas
Mile High 2 B (Convention Center)

## 146

## Connecting the Visual Arts

 to Mathematics with Paul Klee Masterpieces(Pre-K-2) Burst
Embrace NCTM Standards by using the visual arts as a teaching tool in pre-K-grade 2. View images of Paul Klee's artwork and discover and explore fractions, probability, counting, and shapes.

## Jennifer L. Albritton

All Saints' Episcopal School, Fort Worth, Texas
Annabelle G. Gallo
All Saints' Episcopal School, Fort Worth, Texas
Mile High 1 A/B (Convention Center)

## 147 <br> Guided Math: Incorporating Literacy Practices into Mathematical Instruction <br> (Pre-K-5) Burst

Many resources related to guided reading flood the educational landscape. Hear the experience of how a numeracy consultant designed and delivered guided math to struggling primary students on the basis of literacy research, and how such an approach can be applied in a classroom setting.

## David A. R. Costello

Western School Board, Summerside, Canada
Centennial Ballroom A (Hyatt Regency)

## 148

"Knock Some Sense" into Your Warm-Ups
(Pre-K-5) Burst
Number sense, that is. This presentation includes number sense routines that wake up students' minds and bodies. Learn how incorporating movement into warm-ups can increase motivation, deepen student understanding of number relationships, and close the math experience gap. Walk away with an array of activities to amp up your math class.

## Renee L. Snyder

Gahanna-Jefferson Public Schools, Gahanna, Ohio

## Devin E. Anderson

Gahanna-Jefferson Public Schools, Gahanna, Ohio

## Susan M. Signet

Gahanna-Jefferson Public Schools, Gahanna, Ohio
503/504 (Convention Center)

## 149 <br> Response to Intervention: We Need It Now

(Pre-K-5) Burst
Are you struggling to implement a Common Core State Stan-dards-plus curriculum (Common Core State Standards + existing curricular standards) while juggling the need to offer effective intervention to your students? Explore place value, whole-number operations, and equivalent fractions as pivotal topics for your intervention efforts.

## Beth Kobett

Stevenson University, Baltimore, Maryland
Francis (Skip) Fennell
Past President, National Council of Teachers of Mathematics; McDaniel College, Westminster, Maryland

Four Seasons 4 (Convention Center)

## 150

Sir Cumference Gets His Just Desserts
(Pre-K-5) Burst
Join author Cindy Neuschwander on a delicious journey of gathering, recording, and interpreting data in several forms with her newest book, Sir Cumference and the Off-the-Charts Dessert. It's a sweet math treat.

## Cindy Neuschwander

Dublin Unified School District, California
Centennial Ballroom E (Hyatt Regency)

11:30 A.M.-12:00 P.M.

## 151 <br> Early Algebra: How Soon Is Too Soon?

(3-5) Burst
Early algebra is gaining more relevance in mathematics education, especially with the implementation of the Common Core State Standards in most of the United States. This study offers some insight about the ability of students younger than 12 years to develop abstract solutions to a concrete problem-solving task without having explicitly been taught algebra.

## Ute Lentz

University of North Carolina at Charlotte

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\text { Mile High } 3 \text { A (Convention Center) }
$$

## 152 <br> Walking, Talking, Seeing, and Doing Math: A University Math Trail

(3-5, Preservice and In-Service) Burst
Explore using a math trail at a university campus as a way to encourage preservice elementary teachers to consider math outside the classroom. Try a few questions from a "virtual" form of the math trail and gain insight into how this activity was designed and used in an elementary methods course.

Christine L. Latulippe
Norwich University, Northfield, Vermont
603 (Convention Center)

## 153 <br> Visual Vocabulary: Are They Getting the Picture?

(3-8) Burst
Your students seem to understand math concepts during handson activities, yet they don't test well. Is vocabulary the problem? Math terms with multiple meanings could be muddying the waters. Learn how using powerful visuals, mnemonics, and easy strategies to intentionally focus on vocabulary during math instruction can make a huge difference.

## Theresa Tefertiller <br> Consultant, Klein, Texas

## 154 <br> Using Paper Folding to Explore Area for Grades 6-8

## (6-8) Burst

We will derive formulas for areas of figures by using paper folding. Once students see how the formulas are derived from a rectangle (or note card), they will remember the formulas and understand how and why they are used.

## Cathy Banks

Texas Woman's University, Denton
Mile High 4 C/D (Convention Center)

## 155 <br> Mathematical Reasoning and Proof: Letting Students Write Their Own Story

(6-12) Burst
Writing helps students enhance their mathematical reasoning and proof. This presentation shares an instructional way to use story writing in math classrooms. We will use samples of student writing to show how students develop informal proofs written in story form to justify their mathematical reasoning.

# Young Rae Kim <br> University of Minnesota, Minneapolis 

Mi Sun Park
University of Minnesota, Minneapolis
Tamara J. Moore
University of Minnesota, Minneapolis
111/113 (Convention Center)

## 156 <br> Using Public Policy to Promote Writing in the Math Classroom

(6-12) Burst
Explore several projects that enable students to apply math concepts in realistic public policy settings. These projects not only offer a high-interest context to motivate student writing about mathematical ideas but also illustrate the application of math to questions of public policy and social justice.

Aaron Orzech<br>Harvard Graduate School of Education, Cambridge, Massachusetts 110/112 (Convention Center)

## 157 <br> Math Journal 2.0: Jump-Start Your Students' Reflections <br> (9-12) Burst

Reflection is a vital component of student learning. Have your students leave the journal notebook behind and reflect in an online blog. One hundred students in a small school in East Harlem blogged twice weekly for five months and saw a dramatic improvement in retention and test scores. Learn what you need to start math blogs now.

## John Schnatterly

Central Park East High School, New York, New York
103/105 (Convention Center)

## 158 <br> Review Strategies for AP Calculus

(9-12) Burst
Are you tired of reviewing for the AP exam the same way every year? Do you want new approaches to review and enhance the material your students need to know? Come and learn just a few ways to help your students prepare for the AP exam.

## Sam V. Gero

Fairfax County Public Schools, Lorton, Virginia
708/710/712 (Convention Center)

## 159 <br> A New "Sage" on the Stage

(9-12, Higher Education) Burst
Sage is a powerful computer algebra system available as a free download. Discuss activities you can use in a variety of classes, such as algebra, trigonometry, calculus, and discrete mathematics. I will also share examples of projects that you can enact in these and more advanced courses.

## Joe A. Stickles

Millikin University, Decatur, Illinois
403/404 (Convention Center)

## 160 <br> Making the Most of Mentoring: A Reciprocal Learning Experience <br> (9-12, Preservice and In-Service) Burst

The enormous responsibility of mentoring interns and beginning teachers can be overwhelming, especially in mathematics education. Are you making the most of your experience? Are you learning as much as you are trying to provide? Learn strategies and ideas for an effective and rewarding mentoring experience.
Ellen Burleson Matheny
University of Tennessee, Knoxville
607 (Convention Center)

## 161 <br> Concept Mapping in Probability and Statistics <br> (Higher Education) Burst

Teachers or researchers can develop their own assessment instruments by using Inspiration 6, a computerized visual learning tool that inspires students to develop and organize their ideas. The computerized constructions provide the interface upon which students and teachers together can construct probability and statistics models and methods.

Alisa S. Izumi
Western Governor's University, Salt Lake City, Utah
104/106 (Convention Center)

## 162 <br> Connecting Undergraduate Content to Practice

(Higher Education) Burst
"When are we ever going to use this?" is not just a question for K-12 mathematics. Future mathematics teachers often ask their undergraduate professors the same thing. I will briefly describe a majors-based freshman learning community and the ongoing connections made using a content portfolio assignment.
Janet A. White
Millersville University of Pennsylvania
Mineral Hall D/E (Hyatt Regency)

## 11:30 A.M.-12:00 P.M. <br> 163 <br> Interactions between Teachers' Goals and Mathematical Knowledge for Teaching

(Higher Education, Preservice and In-Service) Research Burst
We share our findings regarding how some teachers' goals for student learning shifted in the context of using a research-based conceptual curriculum, and how these goal structures related to their mathematical knowledge for teaching and stated instructional goals during professional development sessions.

Frank S. Marfai
Arizona State University, Tempe
Marilyn P. Carlson
Arizona State University, Tempe
Mile High 3 C (Convention Center)

## 164 <br> Learning to Teach Together: What Worked in a Coteaching Project

(Higher Education, Preservice and In-Service) Burst
Teacher candidates and cooperating teachers coplanned and cotaught mathematics lessons in urban middle schools and high schools by using a variety of coteaching strategies. Find out what worked and what didn't as they embarked on a journey to strengthen teacher preparation and increase student learning.

## Ruth Yopp

California State University, Fullerton
Mark Ellis
Board of Directors, National Council of Teachers of Mathematics; California State University, Fullerton

Capitol Ballroom 5-7 (Hyatt Regency)

## 11:30 A.M.-12:30 P.M.

### 164.1 EW

Prepare Your Students for Algebra Success
(General Interest) Exhibitor Workshop
Despite a variety of approaches to attack the problem, the algebra fail rate has remained stubbornly high in many of our schools. Learn about onRamp to Algebra, Pearson's new solution using explicit instruction, peer-assisted learning, and independent practice with scaffolded supports.

## Pearson

Upper Saddle River, New Jersey
301 (Convention Center)
164.2 ew

# Math Upgrade: Elementary Success <br> Using Songs, Video, and Games 

(Pre-K-5) Exhibitor Workshop
Math Upgrade is an exciting alternative for elementary math success. Find out how teachers transform their classes by using interactive whole-class lessons. Learn how schools move every student up to proficiency with high-interest online courses both at school and at home. Join us for math, music, and fun.

Learning Upgrade LLC
Escondido, California
302 (Convention Center)

### 164.3 CW <br> New K-5 Math Curriculum for Building Mathematical Thinkers <br> (Pre-K-5) Exhibitor Workshop <br> Bridges in Mathematics, second edition, is a comprehensive K-5 curriculum that equips teachers to fully implement the Common Core State Standards in a manner that is rigorous, coherent, engaging, and accessible to all learners. Preview new materials, view video clips of lessons, and meet the program authors.

Math Learning Center
Salem, Oregon
303 (Convention Center)

### 164.4 CW

CCSS Mathematical Practices? Trust CPM's 20 Years of Writing Experience

## (6-12) Exhibitor Workshop

Try some lessons and take home samples of CPM's Core Connections series. The third generation of CPM blends Common Core State Standards content and practice standards in a coherent sequence from sixth grade through algebra 2 . Course elements include problem solving, mathematical thinking, problem-based lessons, and mathematical discourse in a student-centered format.

## CPM Educational Program

Sacramento, California
304 (Convention Center) Workshop

12:30 P.M.-1:30 P.M

## 165



Meeting the Challenges of the Common Core State Standards
(General Interest) Session
Powerful mathematics instruction starts with high standards and classroom materials that meet those standards. But the richest math learning environments have other important characteristics as well. Learn "what counts" in mathematics instruction aimed at producing mathematical thinkers and problem solvers.

Alan Schoenfeld is the Elizabeth and Edward Conner Professor of Education and Affiliated Professor of Mathematics at the University of California, Berkeley. His interests include problem solving, diversity in math education, assessment, and effective teaching. Alan has been involved in NCTM activities for more than thirty years, including his work as one of the authors of Principles and Standards for School Mathematics.

## Alan H. Schoenfeld

University of California, Berkeley
Four Seasons 2/3 (Convention Center)

166

## Redefining "Help": Research-Based Strategies to Help All Students Learn

(General Interest) Session
How can we help students? Engaging students in productive struggle and making relationships explicit make a difference, to name a few. Explore ways to help all students become competent and confident in mathematics.
Jennifer M. Bay-Williams
University of Louisville, Kentucky

> Centennial Ballroom B/C (Hyatt Regency)

## 167 <br> Standards for Preparing Future Mathematics Teachers

(General Interest) Session
NCTM has revised the standards for NCATE's program review process. Review the new standards and how these changes will influence the review process as NCATE transitions to CAEP.

Judy O'Neal
NCTM NCATE SPA Coordinator, Dahlonega, Georgia
207 (Convention Center)

## Get the Buzz at NCTM's Member Showcase



## 12:30 P.M.-1:30 P.M.

## 168 LRR

Developing Strategic Reasoning in Learning the Basic Facts
(Pre-K-2) Session
Learn how to develop reasoning and thinking strategies that greatly increase young students' fluency in addition and subtraction word problems and basic fact knowledge.

## Edward C. Rathmell

University of Northern Iowa, Cedar Falls
Larry P. Leutzinger
University of Northern Iowa, Cedar Falls
107/109 (Convention Center)

## 169 <br> Language Is the Core for Mathematical Concepts

(Pre-K-2) Session
Language bridges the gap between concrete representation and abstract mathematical notation. In early childhood, the material, mathematical, and symbolic language stages support deep understanding of concepts. Learn how language is used to teach the operations and measurement concepts with stories and related materials.

## Rosemary Reuille Irons

Queensland University of Technology, Brisbane, Australia

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\text { Capitol Ballroom } 4 \text { (Hyatt Regency) }
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## 170 LED

Prove It to Myself and Others
(Pre-K-2) Session
What do reasoning and proof look like in the early grades? How will the abilities developed in these areas transfer to formal proof in later grades? What is the role of the Standards for Mathematical Practice in the development of early abilities to reason and prove? We will address these and other essential questions.

Linda K. Griffith
University of Central Arkansas, Conway
405 (Convention Center)

171
Fraction Misconceptions: Importance for Clarity in Language and Representation
(3-5) Session
I will relay findings from a mixed-methods study on misconceptions in third-grade mathematics, particularly with fractions. We will explore several themes, such as the importance of teacher clarity in both language use and representation. I will also explore several examples and make suggestions for practice.

## Holly Henderson Pinter

University of Virginia, Charlottesville
Mile High 3 B (Convention Center)

## 172 <br> Introducing Area Measurement by Using Equipartitioning <br> (3-5) Research Session

Why do students struggle with area measurement and the meaning of a "square unit"? It might be because instruction rushes from tiling to generalizing that area $=$ length $\times$ width without giving students a strong internal measurement structure. We will investigate an area-comparison task that might help, as well as explore connections to the Common Core State Standards.

## Kenny Huy Nguyen

Catlin Gabel School, Portland, Oregon
Mile High 2 C (Convention Center)

## 173 168

Reasoning in the Elementary Classroom: It's Easier Than You Think (3-5) Session
Mathematical reasoning is not only one of the NCTM Process Standards but also an important practice in the Common Core State Standards. We will share several simple strategies from both the Singapore and U.S. perspectives on modifying tasks and questions to bring reasoning to the instructional forefront.

## Berinderjeet Kaur

National Institute of Education, Singapore
Denisse R. Thompson
University of South Florida, Tampa
205 (Convention Center) Workshop

## 12:30 P.M.-1:30 P.M.

## 174 ILB <br> Using Argumentation to Enhance Elementary Students' Understanding of Mathematics

(3-5) Session
Students need opportunities to construct mathematical arguments, but how is this implemented? I will present sample lessons about the arithmetic properties taught, with emphasis on mathematical argumentation. Learn how to modify your own math lessons to improve learning while incorporating reasoning.

## Chepina Rumsey

Kansas State University, Manhattan 709/711 (Convention Center)

## 175 <br> Measure Up: Garden-Based Learning <br> for Length, Area, and Volume

(3-5, Preservice and In-Service) Session
Explore the concept of garden-based learning to develop students' abilities in measurement: length, area, and volume. Raised-bed and container gardens coupled with trellises offer a rich infrastructure. In the context of a school-university partnership, learning ensues year round because of strong community involvement, teacher leadership, and small grants.

## James A. Rye

West Virginia University, Morgantown

## Sarah Selmer

West Virginia University, Morgantown

## Sarah Kane

North Elementary School, Morgantown, West Virginia
102 (Convention Center)

## 176 LCB <br> Developing Good Questions for Reasoning and Proof

(3-8) Session
What is reasoning and proof? What questioning strategies can you use to develop "reasoning and proof thinking" in your classroom? Find out how you can help your students to improve their reasoning and proof abilities.
DesLey V. Plaisance
Nicholls State University, Thibodaux, Louisiana
605 (Convention Center)

## 177 <br> Motivating Students with Concept Development Games

## (3-8) Session

The Common Core State Standards are taught through a conceptual approach. Students must work with manipulatives to build skills and conceptual knowledge. Students need to engage in mathematics lessons, and games are motivational. Participants explore concept games that make student thinking visible.

## Ted H. Hull

LCM: Leadership • Coaching • Mathematics, Pflugerville, Texas
Don S. Balka
TODOS: Mathematics for ALL, LaPaz, Indiana
Ruth Harbin Miles
Mary Baldwin University, Charlottesville, Virginia
Capitol Ballroom 1-3 (Hyatt Regency)

## 178 Rtl <br> Powerful Practices to Make Mathematics More Accessible to Struggling Learners <br> (3-8) Session

Experience powerful approaches for teaching math to struggling students, with or without disabilities, as part of high-quality Tier 1 instruction. Use an Accessibility Planner to identify potential barriers in lessons and align accessibility strategies with students' math strengths and difficulties. Leave with ideas to try with your students.

## Amy Brodesky

Education Development Center, Waltham, Massachusetts
Emily Fagan
Education Development Center, Waltham, Massachusetts
501/502 (Convention Center)

## 179 FA

## Ensuring That All Your Students Are Common Core State Standards Ready <br> (6-8) Session

Learn how to ensure that all students are prepared for the forthcoming Common Core State Standards Assessments. We will analyze the content knowledge and mathematical practices that middle school students need to know and demonstrate, and we will highlight effective instructional practices and strategies to prepare them for these assessments.

Diane J. Briars
Consultant, Pittsburgh, Pennsylvania
Four Seasons 1 (Convention Center)

## 12:30 P.M.-1:30 P.M.

## 180 <br> Getting Serious about Games in Middle-Grades Math

(6-8) Session
Play a little, learn a little. Presenters share findings from a national math challenge featuring Lure of the Labyrinth, an online game where students navigate a graphic novel by using mathematical thinking. Participate in group game play and learn what impact the game had on more than 10,000 middle grades students and their teachers.

## Scot Osterweil

Education Arcade @ MIT, Cambridge, Massachusetts Centennial Ballroom D (Hyatt Regency)

## 181 <br> Socratic Seminar in Math: Development of Math Reasoning Collaboratively

(6-8) Session
Are you struggling to figure out how to teach, assess, and use the mathematical practices in the Common Core State Standards? Using Socratic Seminars (SS) in math can do exactly that. You will gain insight in preparation, design, and implementation of SS in assessing math understanding, all while helping your teens to independently collaborate and think mathematically.

## Ryan M. Higgins

Community Montessori Charter Public School, New Albany, Indiana

Mile High 4 E/F (Convention Center)

## 182 <br> LED

Transforming My View about Reasoning and Proof in Geometry
(6-8, Preservice and In-Service) Session
Students who experience proof as a process of coming to understanding, rather than as another topic to learn, get more out of geometry class. Explore how to unpack mathematical ideas and how to support students to reason mathematical knowledge, using tasks to explore geometric ideas in ways that explain and convince.

## Zulfiye Zeybek

Indiana University, Bloomington
Enrique Galindo
Indiana University, Bloomington

## Mark Creager

Indiana University, Bloomington
Mile High 2 A (Convention Center)

183<br>\section*{English Language Learners in Mathematics: Success from Day One}<br>\section*{(6-12) Session}<br>English language learners benefit from engaging, research-based methods that offer access to challenging content. Learn how to determine appropriate placement in math courses; teach engaging, standards-based math lessons that scaffold instruction; and develop appropriate assessments based on the Common Core State Standards.<br>\section*{Susan Miller-Curley}<br>Miller-Curley Educational Consulting, Denver, Colorado<br>Maria Thomas-Ruzic<br>University of Colorado, Boulder

702 (Convention Center)

## 184 <br> Keeping It Real: Teaching Math through Real-World Topics

## (6-12) Session

How long does burning off a Big Mac take? In basketball, should you ever foul at the buzzer? Explore real-world lessons that teachers can immediately use to address the Common Core State Standards in a fresh, new way. Learn to foster a rigorous understanding of math while challenging students to think about the world more critically.

## Karim Kai Ani

Mathalicious, Alexandria, Virginia
Mile High 1 C/D (Convention Center)

## 185 <br> Mathematical Modeling with Latin Squares: Implementing the Common Core State Standards

(6-12) Session
Use manipulatives to solve recreational problems before attempting a real-world scheduling problem, all involving Latin squares. These activities illustrate implementation of math practice and literacy standards from the Common Core State Standards. We will also discuss a National Science Foundation-funded Maths Camps project in Australia using the same problems.

Lisa A. Lishak
Loachapoka High School, Alabama
Beth Hickman
Alabama Math, Science, and Technology Initiative—Auburn University

703 (Convention Center) Workshop

## 12:30 P.M.-1:30 P.M.

## 186 <br> Reimagining High School Geometry

(6-12) Session
Geometry remains a vital mathematical experience. Our access to 21st-century resources and thinking means, however, that it must change. We will challenge your conception and share ours of a more active, exciting geometry course including elements of design thinking, an expansive attitude toward proof, and more emphasis on real problem solving.

John Threlkeld<br>Colorado Academy, Denver

Pete Horsch
Colorado Academy, Denver
Mile High 4 A/B (Convention Center)

## 187 <br> How and Why: Use Graphing Calculators for Reasoning and Proof

 (9-12) SessionGraphing calculators have not been extensively used for reasoning and proof. Explore algebra 1, algebra 2, and geometry Common Core State Standards-based reasoning and proof problems. Then we will discuss why and how to use the graphing calculator. The problems will come from various NCTM publications and from Common Core State Standards sample assessment problems.

Kathleen Cage Mittag
Retired, University of Texas at San Antonio
505 (Convention Center)

## 188 <br> New Pathways for Students Needing Four Years of Mathematics Credits (9-12) Session <br> "Advanced Algebra with Financial Applications" and "HandsOn Statistics" are two motivating, rigorous mathematics courses that allow students who would have struggled in algebra 2 and precalculus a chance to succeed in, and appreciate the utility of, mathematics in their daily lives. We will present outlines and activites for both courses.

Robert Gerver
North Shore Schools, Glen Head, New York
Richard J. Sgroi
Retired, Bedford Public Schools, New York
203 (Convention Center)

189

## How to Decide whether a Company Has Sex Bias

(9-12, Higher Education) Session
Statistics is more than mean, median, and mode. It is used to make decisions, inferences, and extrapolations, as well as determining correlation. Students need to be able to apply-and know when not to apply-statistics. We will consider three activities or contexts that make students think about how and when to apply statistics.

## Erin R. Richgels

North Pole High School, Alaska
Amber R. Severson
Anoka-Ramsey Community College, Cambridge, Minnesota
Glen W. Richgels
Bemidji State University, Minnesota
Centennial Ballroom F (Hyatt Regency)

## 190 Lisi

## Proof by Osmosis?

(9-12, Higher Education) Session
Osmosis is an apparently effortless absorption of ideas, feelings, attitudes, and so on. Proof in mathematics should be taught as a result of reasoning, not simply learned by students through osmosis.

## Johnny W. Lott

Past President, National Council of Teachers of Mathematics; Retired, University of Montana, Missoula

401/402 (Convention Center)

## 191 ICR

## To Teach Proof, Must We Also Teach Logic?

## (9-12, Higher Education) Session

The reasoning used in mathematical proof is based on linguistic and logical conventions that are rarely made explicit to students. Familiarity with basic logical principles can help resolve the mys-tery-both for what teachers say in class and for the mathematical tasks students are asked to perform by themselves.

## Susanna S. Epp <br> DePaul University, Chicago, Illinois

705/707 (Convention Center)

## 12:30 P.M.-1:30 P.M.

## 192 <br> Creating Teacher Leaders: Professional Development Lessons Learned

(Higher Education, Preservice and In-Service) Session President Series Presentation

Explore the structure of a two-year professional development program focused on creating teacher mentors to influence mathematics instruction and learning in classrooms, schools, and districts. Hear from participants and program leaders about what they learned about coaching, mentorship, leadership, and mathematics.

## Mary B. Swarthout

Research Council on Mathematics Learning; Sam Houston State University, Huntsville, Texas

108 (Convention Center)

## 193 <br> Does What We Believe about Algebra Really Matter to Students?

(Preservice and In-Service) Research Session
Explore a new instrument to measure teachers' self-efficacy in teaching algebra. Engage in algebraic tasks, questions, and discussions designed to offer a venue for preservice and in-service teachers to examine their beliefs about teaching and learning algebra and the potential impact on student learning.

## Trena L. Wilkerson

Baylor University, Waco, Texas

## Bill Jasper

Sam Houston State University, Huntsville, Texas
Sarah Quebec-Fuentes
Texas Christian University, Fort Worth, Texas
Mineral Hall F/G (Hyatt Regency)

## 194 <br> Engaging Prospective Teachers in Generating Conjectures That Call for Proof

(Preservice and In-Service) Session
Engaging prospective secondary mathematics teachers (PSMTs) in reasoning and proof starts with their generating and testing their own conjectures. Everyday classroom situations and experimentation with technology can serve as venues for these conjectures, as seen in our work with PSMTs. We will discuss characteristics of promising situations.

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

601 (Convention Center)

1:00 P.M.-2:00 P.M.

### 194.1 CW <br> Pearson's CMP3: Get Connected <br> (General Interest) Exhibitor Workshop

Experience CMP3, the newest edition of the inquiry-based Connected Mathematics Project. See what's new, including updated Common Core State Standards-aligned content and easy-to-use mobile tools that help with classroom management and capture student work on the go.
Pearson
Upper Saddle River, New Jersey

$$
301 \text { (Convention Center) }
$$

### 194.2 CW

Think Through Math
(General Interest) Exhibitor Workshop
Come hear the latest from Think Through Math.
Think Through Math
Pittsburgh, Pennsylvania
303 (Convention Center)


## 1:00 P.M.-2:00 P.M.

## 194.3 ew <br> Meeting the Needs of Mathematically Talented Students

(Pre-K-5) Exhibitor Workshop
Support your talented K-5 students with award-winning Project M2 and Project M3. These Common Core State Standardsaligned supplemental units will motivate high-ability learners and can increase math achievement in students through engaging, real-world investigations. Learn about each program's instructional design and get a sample lesson you can use.

## Kendall Hunt Publishing Co.

Dubuque, Iowa
304 (Convention Center)

### 194.4 CW

## Algebra Upgrade: Interactive Lessons Using Songs, Video, and Games <br> (6-12) Exhibitor Workshop

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

## Learning Upgrade LLC

Escondido, California
302 (Convention Center)

1:00 P.M.-2:15 P.M.

## 195

## Building Number Sense in

Pre-K-Grade 2
(Pre-K-2) Gallery Workshop
Developing early numeracy concepts is essential for a higher-level understanding of our number system. Teachers' knowledge of early number concepts is central for students' learning. Engage in an environment to practice early numeracy concepts that will become routines or workstations in the mathematics classroom.

## Cynthia Hillman-Forbush <br> Hillman-Forbush Associates, Houlton, Maine

Mile High 2 B (Convention Center)

## 196 <br> Delving Deeper into Pattern Block Designs: Can You Prove It?

(Pre-K-2) Gallery Workshop
You will combine two-dimensional shapes, recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different to develop the background for initial understandings of properties such as symmetry and congruence.
Wanda C. Noblin
Spartanburg District Three, South Carolina
Beverly C. Vogt
Consultant, Parkville, Missouri
Mile High 4 C/D (Convention Center)

## 197 <br> Shuffling into Math: Games for Response to Intervention <br> (Pre-K-2) Gallery Workshop

Come prepared to play card and dice games that help you teach all students in your class. Concepts covered include numeration, operations, place value, and more. Get ideas to adapt activities, assessment, and journal writing/response. Experience the power of games as a teaching strategy to reach all learners.

## Jane Felling

Box Cars \& One-Eyed Jacks, Edmonton, Canada
Centennial Ballroom A (Hyatt Regency)

## 198 <br> Successful Strategies to Master Multiplication <br> (Pre-K-5) Gallery Workshop

Students encounter situations that involve multiplication daily. Explore a range of flexible thinking strategies that can help develop the basic multiplication facts. See practical ways to develop multiplication facts through visual materials and games.
Peter Stowasser
ORIGO Education, St. Charles, Missouri

603 (Convention Center)

## 199 <br> Using Household Items to Engage Students in Meaningful Mathematics <br> (Pre-K-5) Gallery Workshop <br> What do paper plates, index cards, cotton swabs, and coffee stirrers have in common? They are inexpensive and readily available. Learn strategies to turn these everyday items into engaging tools to help your students make connections to mathematical concepts, including time, geometry, multiplication, and division.

## Lisa A. Brooks

University of Central Florida, Orlando
607 (Convention Center)

## 200

Fracturing Misconceptions in Fractions
(3-5) Gallery Workshop
Let's help all students understand. This gallery workshop will give you ideas to teach fractions and help even your lowest-scoring students understand them. You will see how to reduce fractions conceptually, how to build number sense with fractions, and how to lead students to develop their own fraction algorithms. We will also cover discussion and reasoning.
Diane J. Fischer
Rockford Public Schools, Illinois
103/105 (Convention Center)

## 201

## Can You Find Pi in the Pumpkin Patch?

(3-8) Gallery Workshop
Incorporate math content and students' excitement of picking pumpkins by engaging them in the classroom with metric tape measures, rulers, circular objects, and calculators to complete a data sheet to discover pi. Move to the real world of a local orchard to use those same tools and data sheet to measure pumpkins and apples in the orchard to find pi.

## Judy K. Ackermann

Mascoutah School District 19, Illinois
Mile High 3 A (Convention Center)

## 202

## Geometry Gems: Dissections That Promote Mathematical Thinking and Spatial Reasoning

(6-8) Gallery Workshop
Geometric dissections involve cutting a figure into parts that are rearranged to form another figure. The mathematics is based on the theorem that any polygon can be transformed into any other of the same area by cut and paste. We will design and construct 2- and 3-D dissection puzzles and explore their mathematics and history.
Patricia S. Baggett
New Mexico State University, Las Cruces, New Mexico
Andrzej Ehrenfeucht
University of Colorado, Boulder
Mineral Hall A-C (Hyatt Regency)

## 203 <br> Geometry on a Shoestring Budget <br> (6-8) Gallery Workshop

The most profound, interactive, and dynamic activities in geometry don't require expensive technologies-just the strings on your shoes. Intriguing-though cheap and nontraditional-geometric manipulatives come from common materials such as paper, golf balls, dowels, and string, proving that you can have the road to reasoning and proof on a dime.

## David K. Masunaga

Iolani School, Honolulu, Hawaii
503/504 (Convention Center)

## 204 <br> Statistical Reasoning in the Middle School <br> (6-8) Gallery Workshop

The Common Core State Standards call for more statistics content in the middle grades. Explore informal and preformal tasks designed to support student understanding, and incorporate them into a learning progression leading to the formal statistics students will use in high school and beyond.

Raymond Johnson University of Colorado at Boulder
Susan Thomas
University of Colorado at Boulder
Mineral Hall D/E (Hyatt Regency)

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## 205 <br> TI-Nspired for the Middle Grades: Common Core State Standards-Based Investigations

(6-8, Preservice and In-Service) Gallery Workshop
Engage in several TI-Nspire activities designed for middle-grades students to explore the Common Core State Standards for Mathematics. Explorations will relate to geometry and functions. These activities are part of the Math Nspired resources on education.
Ann M. Schlemper
Columbia College, Missouri
Capitol Ballroom 5-7 (Hyatt Regency)

## 206 <br> Algebra Reasoning, Common Core State Standards, English Language Learners: Analyzing Motion Graphs <br> (6-12) Gallery Workshop

We will use calculator-based rangers to create motion graphs that support English language learners in making connections between motion in 3-D space and how that is displayed on a dis-tance-time graph. We will work with linear equations, domain/ range, independent/dependent variables, intersecting lines, slope, parallel and perpendicular lines, and more.

## Angela Thompson

University of California, Santa Cruz

## Alex Radosavljevic

University of Illinois at Chicago
506/507 (Convention Center)

## 207

## Do the Function Dance with Sketchpad 5 <br> (6-12) Gallery Workshop

How better to explore rate of change than as independent and dependent variables dancing together? We'll vary $x$ and $y$ by doing both real and computer-based dances of geometric, linear, quadratic, exponential, and composite functions. Bring your laptop or iPad with Sketchpad. Leave with classroom-ready activities suitable for geometry and algebra.

Scott Steketee<br>KCP Technologies, Philadelphia, Pennsylvania<br>Daniel Scher<br>KCP Technologies, Emeryville, California

708/710/712 (Convention Center)

## 208

## Flying through the Common Core <br> State Standards: Aviation-Based Lessons for Integrated Mathematics

(6-12) Gallery Workshop
Discover the materials created by Kenan Fellow Allison George. Through the lens of aviation, we will explore inquiry-based lessons applicable to both traditional and integrated math teachers. You will leave with three units (one each for Integrated Math 2, 3, and 4) and the foundation to develop your own.

## Allison M. George

Winston-Salem/Forsyth County Schools, North Carolina
111/113 (Convention Center)

## 209

From the Fundamental Counting Principle to Infinity and Beyond

(6-12) Gallery Workshop

Students struggle with finding sample spaces and knowing when using permutations, combinations, or other strategies is appropriate. Yet without mature counting techniques, probability is impossible to calculate. Solve a counting problem, explore the mathematics within, and discuss implications for teaching counting.

## Patrick M. Kimani

California State University, Fullerton
Sarah Anderson
Magnolia Elementary School District, Anaheim, California
Four Seasons 4 (Convention Center)

## 210 <br> Racecars, Pennies, and Men with Hats: Teaching Algebra for Understanding

## (6-12) Gallery Workshop

Experience three hands-on mathematical tasks used to build students' conceptual understanding. We will explore rate of change, exponential growth, and compound inequalities. We will also discuss ways to incorporate reasoning and sense-making skills into daily lessons and assessments.

## Amy Nebesniak

Washburn University, Lawrence, Kansas
Darla Berks
Lincoln Public Schools, Nebraska
Centennial Ballroom E (Hyatt Regency)

## 211 <br> Strike a Pose: Modeling in Algebra (6-12) Gallery Workshop <br> The pressure is higher than ever to include modeling in mathematics. Explore what linear and quadratic modeling looks like in the algebra curriculum. With minimal, inexpensive supplies, we will collect and analyze data and then use transformations to fit student models, using photos and technology. <br> Jennifer North Morris <br> Consultant, Tucson, Arizona <br> Brenda Elmore <br> Lakeside Middle School, Anderson, South Carolina <br> Mile High 3 C (Convention Center)

## 212 <br> Algebra 2 and Trigonometry: Wrap Your Brain and Hands Around It

(9-12) Gallery Workshop
Participate in some fun, quick activities to engage you and your students. Discover how simple things such as M\&M's, toothpicks, paper plates, patty paper, rope, cone cups, movement, and singing will spice up your teaching and help your kids retain what they learn. Wrap your brain and hands around several activities, including the trig hand jive.

## Gary Kubina

Retired, Mobile, Alabama
406/407 (Convention Center)

## 213 <br> Making Sense of Statistical Inference <br> (9-12) Gallery Workshop <br> Inference makes up about half of most introductory statistics courses, including AP Statistics. Explore some of the issues that make confidence intervals and hypothesis tests so difficult for students. Then we will examine strategies and classroom-ready resources to help students do inference successfully.

## Daren Starnes

The Lawrenceville School, New Jersey Centennial Ballroom G/H (Hyatt Regency)

## 214

## NASA's Exploring Space through Algebra 1

## (9-12) Gallery Workshop

And we have liftoff. We will introduce you to algebra 1 lessons created from real data based on NASA's human spaceflight projects. The problems were developed by math educators who collaborate with scientists and engineers. The opportunity to analyze real data will inspire students.

## Monica Trevathan

NASA Human Research Program Education and Outreach, Houston, Texas

Paulette Granger
NASA Johnson Space Center, Houston, Texas
Mile High 1 E/F (Convention Center)

## 215

## Rocket into Quadratics

(9-12) Gallery Workshop
Explore pre-engineering project-based work for algebra to precalculus. We will design, build, and launch paper rockets. This easy, low-cost, multiday project uses air pressure to creatively explore functions/modeling. Further discussion will include CAD 3-D visualization, balsa wood bridges, rollercoaster and catapult design, and robotics and bioengineering projects.

## Patricia W. Lytton

Regional Technical Education Consortium at Lane Community College, Eugene, Oregon

110/112 (Convention Center)

## 216 <br> Teaching the Common Core State Standards Statistics Strand with the TI-Nspire <br> (9-12) Gallery Workshop <br> Learn how to introduce your students to various Common Core State Standards statistical concepts with hands-on activities and then use the TI-Nspire to make the statistics come alive. We will explore (1) multiple graphs of different data types, (2) measures of center and spread, (3) probability simulations, and (4) sampling methods and distributions.

## Sharon E. Bruce

Colorado Springs Christian School, Colorado
201 (Convention Center)

## 217 <br> Fundamental Theorem of Calculus: Integration and Differentiation; Activities Using Technology

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

Working through a series of paper-pencil and TI-84 technol-ogy-based classroom activities, you will experience hands-on investigations designed to help students improve their conceptual understanding of the fundamental theorem of calculus. Activities focus on connections between integral defined functions and the derivatives of these functions.

## Mike Koehler

Blue Valley North High School, Overland Park, Kansas
104/106 (Convention Center)

## 218

Teaching Content through Problem Analysis: Driven by Common Core State Standards for Mathematical Practices

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

Experience learning functions with deep understanding through problem analysis, whereby we mine a typical school math problem for the rich mathematics that can be found when it is solved in multiple ways, using multiple representations, and connected to related ideas with the Mathematical Practices all in use.

## Alyson E. Lischka

Kennesaw State University, Georgia

## Mary Garner

Kennesaw State University, Georgia

## Sarah Ledford

Kennesaw State University, Georgia
704/706 (Convention Center)

## 219 BA

Research in Algebraic Thinking: Continuing the Conversation
(Preservice and In-Service) Gallery Workshop
Meet the speakers in smaller, interactive groups to facilitate discussion about the sessions and future work.

## Megan Franke

University of California, Los Angeles
Mark Driscoll
Education Development Center, Waltham, Massachusetts
Daniel I. Chazan
University of Maryland, College Park
403/404 (Convention Center)

## 2:00 P.M.-3:00 P.M.

## 220

## An English-Language-Learning Instructional Model for Mathematics That Works

(General Interest) Session

Mastering mathematical reasoning and proof for English language learners (ELLs) requires academic discourse skills. Learn about an instructional model that supports the development of these skills and leads to high academic achievement and proficiency. Leave with an understanding of key instructional principles that make mathematics accessible to ELLs.

## Erin R. Mayer

Albuquerque Public Schools, New Mexico
Lisa M. Meyer-Jacks
Dual Language Education of New Mexico, Albuquerque
Gregg W. McMann
Springer Municipal Schools, New Mexico
Centennial Ballroom D (Hyatt Regency)

## 221 <br> Common Core State Standards, Mathematics, and Response to Intervention: The Mysterious Trio <br> (General Interest) Session <br> The Common Core State Standards and a response to intervention framework are now required in most schools, but few resources are available to help teachers integrate them. The Common Core State Standards content, strategies, and resources presented will help you engage your students, using interventions aligned with the Common Core State Standards as you implement.

Dolores T. Burton
New York Institute of Technology, Old Westbury
John Kappenberg
New York Institute of Technology, Old Westbury
Mile High 2 A (Convention Center)

## 222 <br> Creating Higher-Achieving Math Students in the App Generation

(General Interest) Session
We are in an era when desktop and laptop computers are being replaced by smartphones and tablet computers. Explore the apps that can potentially increase student performance in high-stakes math tests based on the Common Core State Standards. We will share an up-to-date list of apps.

Gary G. Bitter
Arizona State University, Tempe
Rusen Meylani
Arizona State University, Tempe

## 223



## Eight Instructional

 Practices to Promote Grades K-8 Number Sense (General Interest) Session It is time for NCTM's focus on reasoning and sense making in high school to extend to grades $\mathrm{K}-8$. To improve student achievement, we must consider both content and instructional process. What are some characteristics of classrooms that implicitly build student sense making and understanding? Let's start with number and operations.
## Linda M. Gojak

President, National Council of Teachers of Mathematics; John Carroll University, University Heights, Ohio

Four Seasons 2/3 (Convention Center)

224
 Enhancing Mathematics Curricula and Instruction to Facilitate Students' Participation

## (General Interest) Session

Facilitating participation in mathematics classrooms is vital to student success. I will share how mathematics teachers learned to facilitate student participation by using research-based strategies and watching videos of their lessons filmed by students wearing head-mounted cameras.

Kathryn Chval's research focuses on effective preparation models and support structures for teachers; effective elementary teaching of underserved populations, especially English language learners; and curriculum standards and policies. Before joining the University of Missouri, Chval served as the acting section head of the Teacher Professional Continuum program in the Division of Elementary, Secondary, and Informal Education at the National Science Foundation. She spent twelve years at the University of Illinois at Chicago directing NSF-funded curriculum and professional development projects after teaching at the elementary level.
Kathryn Chval
University of Missouri, Columbia
Mile High 1 C/D (Convention Center)

## 225 LSR <br> Developing Children's Algebraic Thinking through Problem-Based Function Tasks

(Pre-K-5) Session
Functional thinking is a crucial domain by which children can develop algebra understanding and engage in the Common Core State Standards Mathematical Practices. Knowing characteristics of tasks that can effect functional thinking is essential. Examine the components of a research-based instructional sequence designed to develop children's functional thinking.

## Maria Blanton

TERC, Cambridge, Massachusetts
Angela Murphy Gardiner
TERC, Cambridge, Massachusetts
Barbara M. Brizuela
Tufts University, Medford, Massachusetts
Mile High 2 C (Convention Center)

## 2:00 P.M.-3:00 P.M

## 226 ICR <br> "Seeing" Arguments in Early Grades

(Pre-K-5) Session
The Common Core State Standards calls for all students to construct arguments yet gives few details about what constitutes an argument. Research has developed ways of describing and classifying arguments in early grades (e.g., Krummheuer 2007; Yackel 2002). We can make connections to practice by considering how research helps us "see" arguments in classrooms.
David A. Yopp
Montana State University, Bozeman
405 (Convention Center)

## 227 LRS

Teaching Mathematics through Problem Solving in the Common Core State Standards Classroom
(Pre-K-5) Session
Using videos, examine how elementary schoolchildren can engage in the mathematical practices as envisioned in the Common Core State Standards and NCTM's Process Standards. Learn how to use problem solving as the core of your curriculum to engage students in modeling, using tools, developing reasoning, and communicating effectively.

Melanie R. Wenrick
California State University, Fresno
Jean Behrend
California State University, Fresno
505 (Convention Center)

## 228 <br> Empowering Students: Social Justice Mathematics Teaching in Elementary Classrooms

(3-5) Session
Explore teaching for social justice. We will engage in hands-on activities that show how to incorporate mathematics lessons to empower students to understand, analyze, and critique the world around them by using mathematics. You will also receive resources to help plan more lessons.
Courtney A. Koestler
University of Arizona, Tucson
Mathew D. Felton
University of Arizona, Tucson
Mineral Hall F/G (Hyatt Regency)

## 229 <br> Does Your Curriculum Speak to You? Considerations for Effective Use

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

We present four different curriculum programs through a teacher's eye to provide key ideas for effective use of curriculum materials. Discover how Investigations, Math Trailblazers, Scott Foresman-Addison Wesley Mathematics, and Math in Focus speak to teachers. Learn to "listen" to the curriculum for support and guidance on teaching mathematics.

## Ok-Kyeong Kim

Western Michigan University, Kalamazoo
Dustin 0. Smith
Western Michigan University, Kalamazoo
Napthalin A. Atanga
Western Michigan University, Kalamazoo
702 (Convention Center)

## 230 RtI

The Prime Online Stance: Teacher
Inquiry and Response to Intervention
(3-5, Preservice and In-Service) Session
Response to intervention is a framework including researchbased instruction, progress monitoring, and data analysis for instructional decision making. Explore Prime Online, an online professional development program focusing on teacher inquiry for collecting data and making instructional decisions regarding student progress.
Stephen J. Pape
Johns Hopkins University, Baltimore, Maryland
Cynthia Griffin
Unviersity of Florida, Gainesville
Nancy Fichtman
University of Florida, Gainesville
401/402 (Convention Center)

## 231 <br> Doing What Works: Focus on Problem Solving in Grades 4-8

## (3-8) Research Session

The Doing What Works website translates research-based practices into tools to support and improve classroom instruction on topics such as mathematical problem solving, teaching fractions, critical foundations for algebra, and response to intervention. Explore the Institute of Education Sciences Practice Guide for Improving Mathematical Problem Solving in Grades 4 Through 8.

## Clare E. Heidema

RMC Research Corporation, Denver, Colorado

## 2:00 P.M.-3:00 P.M

## 232 <br> Money and Math: A Financial Classroom Management Strategy

(3-8) Session
Can financial literacy go beyond the math classroom? Can teachers motivate and engage their students by incorporating financial literacy concepts in their classroom? Learn how several teachers from Ontario use a system that teaches financial reasoning, problem solving, and critical thinking in a setting that prepares students for the real world.

## Alain Girouard

CFORP, Ottawa, Canada
203 (Convention Center)

## 233 도

## When Arguing Is a Good Thing:

## The Case of Fractions

## 235 LeB <br> Giving Effective Feedback for Students to Help Refine Their Reasoning

(6-8) Session
Our middle graders can benefit from an early exposure to deductive reasoning. I will report young adolescents' learning behavior in deductive reasoning (such as the law of detachment), share their common mistakes in using deductive reasoning, and demonstrate how effective feedback plays a significant role in improving student skills.

## Woong Lim

Kennesaw State University, Georgia
709/711 (Convention Center)
(3-8) Session
According to the Common Core State Standards, students in fifth and sixth grade must make sense of fraction multiplication and division. Prepare to meet these standards while exploring classroom-tested problems that encourage students to construct viable arguments and critique the reasoning of others as they reason abstractly and quantitatively about fractions.

## Juli K. Dixon

University of Central Florida, Orlando
501/502 (Convention Center)

## 234 <br> Direct Variation Is Not a Slippery Slope

(6-8) Session
I will share a series of carefully designed activities that help students make sense of slope as a constant rate of change. We will connect slope and direct variation. We will also use applications of skate ramps, TV screens, and protein shakes, as well as discuss inverse variation.

## Laurie Boswell

The Riverside School, Lyndonville, Vermont
Centennial Ballroom B/C (Hyatt Regency)
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Hannah Heleer from Mechamicsburg, PA writes:
"My students just L.OVE the stories and are proud that they can finally recall math facts that have stymied them for so long

## 2:00 P.M.-3:00 P.M.

## 236 <br> Powerful Strategies to Develop Algebraic Thinkers in Middle School (6-8) Session <br> Learn how students can gain a solid understanding of linear functions, by first studying in-out boxes (as functions), then number sequences, then finite differences to find the general term, then arithmetic sequences, and finally slope, $f(x)$ intercept, and graphs. We will explore powerful applications.

## John J. Kerrigan

Professor Emeritus, West Chester University, Pennsylvania
601 (Convention Center)

## 237 168 <br> Proportional Reasoning: It's Much More than Cross-Multiplying

(6-8) Session
Proportional reasoning is a major focus and integrative theme of the middle grades Common Core State Standards. We will investigate activities from the free, online Scale City and the program Math Innovations that develop understanding of proportionality through reasoning and problem solving, not rote memorization of rules and definitions.
Linda Jensen Sheffield
Northern Kentucky University, Highland Heights
705/707 (Convention Center)

## 238 <br> Teaching Rational Numbers to the iGeneration

## (6-8) Session

Explore how to engage and motivate the teaching of rational numbers to the iGeneration. The Common Core State Standards has clearly placed a focus on the understanding of rational numbers, so this session offers you strategies, videos, and formative assessments that can lead to building better facility with rational numbers.

## Eric Milou <br> Rowan University, Glassboro, New Jersey

Four Seasons 1 (Convention Center)

## 239 <br> All CAS, All the Time: Three Schools' Journeys to Implementation

## (6-12) Session

Three different high schools adopted CAS handhelds across all math courses. Find out why and how we made the switch. We'll discuss issues of curriculum, teaching, finances, logistics, and public relations. We'll tell you what worked, what surprised us, and how we managed.
Phil Gartner
Glenbrook South High School, Glenview, Illinois
Steve Viktora
New Trier High School, Winnetka, Illinois
P. J. Karafiol

Chicago Public Schools, Illinois
Mile High 4 E/F (Convention Center)

## 240 <br> Math Activities That Promote Academic Discourse for English Language Learners

## (6-12) Session

Research shows that English language learners acquire English proficiency when given ample opportunities to practice and apply their reading, writing, speaking, and listening skills. Experience activities that promote the use of social and academic language and the required mathematical practices of the Common Core State Standards.

## Amy Serda-King

The Learning Buzz, San Antonio, Texas
207 (Convention Center)

## 241

## Preparing for the Common Core State Standards by Using a SMART Board

(6-12) Session
Understanding is at the core. Use SMART Board technology to develop and deepen the understanding of important mathematical concepts. Create engaging, interactive lessons to build skills. Dynamic graphing programs tie concepts together. Add an individual response system for formative assessment to allow all students to participate.
Linda Treilman
Mercer County Community College, West Windsor, New Jersey
Mile High 4 A/B (Convention Center)

## 2:00 P.M.-3:00 P.M.

## 242 <br> Advanced Quantitative Reasoning: <br> Meaningful Mathematics for High School Seniors

(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 presents rich problems that seniors find engaging; that connect a wide range of mathematics, statistics, and modeling; and that leverage mathematical action technologies and classroom discourse.

Gregory D. Foley
Ohio University, Athens
Daniel A. Showalter
Ohio University, Athens
205 (Convention Center)

## 243 I6R <br> Statistical Reasoning: Convincing Evidence versus Proof

(9-12) Session
Understanding the distinction between convincing evidence and proof is essential for students learning inferential methods in statistics. We will address ways to develop students' understanding of this distinction and will explore implications in terms of the conclusions that can be drawn based on data from statistical studies.

## Roxy Peck

California Polytechnic State University, San Luis Obispo
107/109 (Convention Center)

## 244 <br> Where Does It Fall, or Not: <br> Exponential Functions

(9-12) Session
The Common Core State Standards expect our students to "distinguish between situations that can be modeled with linear functions and with exponential functions." We will explore the progression of modeling with both linear and exponential models before moving into quadratic functions in an algebra 2 course.
Paul A. Kennedy
Colorado State University, Fort Collins
Janet Oien
Poudre School District, Fort Collins, Colorado
Capitol Ballroom 1-3 (Hyatt Regency)

## 245

## Modeling and Analysis of Biological Content to Enhance Mathematics

## (9-12, Higher Education) Session

In mathematics, student cognition of calculations may be enhanced by a direct application and understanding of pertinent biological concepts. We developed and tested a one-week curriculum applicable for a grades 9-12 or college-level mathematics course, using a data-driven biogeographic model of the theory of island biogeography.

Jana F. G. Eggleston<br>Old Dominion University, Department of Biological Sciences, Norfolk, Virginia<br>Holly Gaff<br>Old Dominion University, Department of Biological Sciences, Norfolk, Virginia<br>Ginger S. Watson<br>Old Dominion University, Department of STEM Education and Professional Studies, Norfolk, Virginia

108 (Convention Center)

## 246 LCR <br> Technology in Support of Proof

(9-12, Higher Education) Session
Technology can provide a "conjecture generator," where we use its power to find mathematical patterns that might lead to the formulation of a conjecture. Proving such a conjecture is often viewed outside the use of technology. We will examine several examples where technology offers powerful hints to mathematical structure that aid in proof.

## Thomas Dick

Oregon State University, Corvallis
605 (Convention Center)

## 247 <br> Writing to Promote Conceptual Understanding in College Algebra

## (9-12, Higher Education) Session

Knowing the procedures is only part of the story. Successful students also demonstrate conceptual understanding. We will explore the successes and challenges of incorporating writing about vocabulary and concepts in college algebra by looking at results from tasks used to foster students' communication ability and conceptual understanding.

## Susan Gay

University of Kansas, Lawrence
Ingrid Peterson
University of Kansas, Lawrence
Mile High 3 B (Convention Center)

## 2:00 P.M.-3:00 P.M.

## 248 <br> Constructing Arguments: Preservice Teachers' Understanding of a Common Core State Standards Mathematical Practice <br> (Higher Education, Preservice and In-Service) Session <br> One of the Common Core State Standards's Mathematical Practices focuses on students' constructing viable arguments and critiquing the arguments of others. This presentation spotlights preservice teachers' beliefs and perspectives on what constitutes a viable argument and what this might look like in a classroom. <br> Mary Pat Sjostrom <br> Chaminade University, Honolulu, Hawaii <br> Cory A. Bennett <br> Idaho State University, Pocatello <br> Centennial Ballroom F (Hyatt Regency) <br> 249 <br> Doctorates in Mathematics Education: A Shortage Continues and Jobs Exist

## (Preservice and In-Service) Session

Learn about the shortage of doctorates in mathematics education and hear results from research on job opportunities. We will suggest factors to consider when choosing a doctoral program, as well as challenges of $\mathrm{K}-12$ classroom teachers returning as graduate students and then transitioning into a career in higher education.

## Robert Reys

University of Missouri, Columbia

## Bob Glasgow

Southwest Baptist University, Bolivar, Missouri
Christa Jackson
University of Kentucky, Lexington
102 (Convention Center)

## 2:30 P.M.-3:30 P.M.

## 249.1 ew

## Pearson High School Math and the Common Core

(General Interest) Exhibitor Workshop
Learn how this blended print and digital curriculum not only engages grades $8-12$ students but also infuses Common Core State Standards and Mathematical Practices throughout each lesson to ensure all learners acquire the critical knowledge and skills necessary to succeed in college and in their careers.

## Pearson

Upper Saddle River, New Jersey
301 (Convention Center)

### 249.2 CW

Teach Math Like Never Before, Using Tried-and-True Classroom Strategies
(General Interest) Exhibitor Workshop
The Conceptua Math online curriculum for grades K-8 uses interactive, visual representations that engage teachers and students in math curriculum like never before.

## Conceptua Math

Petaluma, California

## 303 (Convention Center)

## 249.3 ew <br> Common Core Math: <br> Challenges and Opportunities

(Pre-K-5) Exhibitor Workshop
Implementing the Common Core State Standards can be challenging during times of decreased funding. See how ORIGO Education has built on its reputation of innovation to develop Stepping Stones, an online K-5 core program that turns challenges into opportunities. You'll get a coupon to unlock ORIGO's full suite of digital products.
ORIGO Education
St. Charles, Missouri
302 (Convention Center)

## 2:30 P.M.-3:30 P.M.

### 249.4 CW

## Discover New Ways to Make High School Math Meaningful

## (6-12) Exhibitor Workshop

The Discovering Mathematics series draws on the teaching experience of noted algebra and geometry authors and engages students as they connect mathematics to their own experiences. Learn how each program's engaging student investigations develop the Common Core State Standards Mathematical Practices and make math meaningful for all learners.
Kendall Hunt Publishing Co.
Dubuque, Iowa
304 (Convention Center)

## 2:45 P.M.-4:00 P.M.

## 250

## The Power of Ten: Framing Student Understanding

(Pre-K-2) Gallery Workshop
This hands-on presentation uses ten frames as a valuable teaching tool you can incorporate in the classroom. We will address Mathematical Practices, emphasizing reasoning. We will explore a variety of activities, including basic, games, and open-ended problems. Video clips and student work will give you glimpses of how this could look in the classroom.

## Lisa Rogers

Math Solutions, Sausalito, California
Amy C. Mayfield
Math Solutions, Sausalito, California
Mile High 1 A/B (Convention Center)

## 251

## We Have Selected a Good Task; Now What?

(Pre-K-2) Gallery Workshop
Explore lessons using strategies to promote class discussion when students engage in well-designed tasks. We will share teachers' effective use of the five practices-anticipating, monitoring, selecting, sequencing, and connecting-identified in the NCTM publication 5 Practices for Orchestrating Productive Mathematics Discussions.

## Melfried Olson

University of Hawaii, Honolulu

## Fay Zenigami

University of Hawaii, Honolulu

## 253 <br> Using Children's Literature to Promote Reasoning in the Early Grades

(Pre-K-5) Gallery Workshop
Children's literature can offer a context from which to engage children in developing reasoning skills. You will have the opportunity to experience these activities and learn more about their potential for the classroom.

## Sandi Cooper

Baylor University, Waco, Texas
Erin Spencer
Baylor University, Waco, Texas
111/113 (Convention Center)

## 254 <br> Defining Quadrilaterals: What Is a Trapezoid, Anyway?

(3-5) Gallery Workshop
We will build common understandings of special quadrilaterals on the basis of their properties and formal definitions. We will develop a hierarchy connecting all quadrilaterals through our reasoning and proof and show how classroom discourse can help all students convince each other of their thinking.

Nita Walker
Santa Ana USD, California
Barbara Post
Retired, Orange, California

Mile High 4 C/D (Convention Center)


## NEW TITLES ON THE COMMON CORE



NEW | Connecting the NCTM Process Standards and the CCSSM Practices
BY COURTNEY KOESTLER,
MATHEW D. FELTON, KRISTEN N. BIEDA, AND SAMUEL OTTEN
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NEW | Curriculum Issues in an Era of Common Cores State Standards for Mathematics BY CHRISTIAN HIRSCH ©2012, Stock \# 14319


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Implementing the Common Core State
Standards through
Mathematical
Problem Solving:
Kindergarten-Grade 2
BY SYDNEY SCHWARTZ
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Corner 2
EDITED BY
PEGGY HOUSE
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NEW | The Impact of Identity in K-8 Mathematics: Rethinking EquityBased Practices

BY DANNY MARTIN, JULIA agulrre, and karen MAYFIELD-INGRAM
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NEW | The 75th Anniversary NCTM Yearbook

Defining
Mathematics Education:
Presidential
Yearbook
Selections
1926-2012
EDITED BY
FRANCIS (SKIP) FENNELL AND WILLIAM SPEER

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## NEW TITLES in the

 Bestselling Essential Understanding Seriesrose mary zbiek, series editor
Developing Essential Understanding: Data Analysis and Statistics for Teaching Mathematics in Grades 6-8

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BY ROXY PECK, ROB GOULD, AND STEPHEN MILLER
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BARBARA DOUGHERTY, SERIES EDITOR

## Putting

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For more information or to place an order, please call (800) 235-7566 or visit www.nctm.org/catalog.

## 2:45 P.M.-4:00 P.M.

## 255 <br> Making Sense of Multiplication and Division

## (3-5) Gallery Workshop

Explore ways to help students understand multiplication and division of whole numbers, fractions, and decimals. The Common Core State Standards suggests new ways of reasoning about, representing, and computing with these operations, offering new opportunities for students to better understand them. Activities will include hands-on activities and games.

## Janet H. Caldwell

Rowan University, Glassboro, New Jersey
104/106 (Convention Center)

## 256 <br> Measurement: Line Segments to Rectangles to Rectangular Prisms

## (3-5) Gallery Workshop

We will focus on length, area, and volume as measurements in one, two, and three dimensions, respectively. Through hands-on experiences with line segments, rectangles, and rectangular solids, using tiles and cubes, you will experience these measurements as a sequence, where each step depends on the one that came before.

Richard Thiessen<br>AIMS Education Foundation, Fresno, California<br>Capitol Ballroom 5-7 (Hyatt Regency)

## 257 <br> Developing Mathematical Reasoning across the Strands with Pattern Blocks

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

Pattern blocks were developed more than fifty years ago. Students of all ages gain mathematical insights while building and solving puzzles. Working totally hands-on, discover the unique properties of these six blocks. Strengthen mathematical reasoning for concepts involving number and numeric operations, geometric concepts, and algebraic reasoning.

Peggy McLean
Peggy McLean Consulting, San Carlos, California
110/112 (Convention Center)

258
Mathematical Practice:
3E, Eight Exemplars That
Enhance Understanding
(3-5, Preservice and In-Service) Gallery Workshop
Explore the eight Standards for Mathematical Practice found in the Common Core State Standards. Engage in exemplary activities and take-back examples to enhance understanding, provide meaning in context, and demonstrate the power of these practices as students are learning mathematics.

## Carolyn M. Moore

McGraw-Hill, Columbus, Ohio
103/105 (Convention Center)

## 259 <br> Rock with Scissors and Paper: Spatial Reasoning in Your Hands <br> (3-8) Gallery Workshop <br> President Series Presentation

Strengthen students' spatial reasoning and visual thinking through paper folding and cutting. Solve puzzles, create pop-ups, and engage students with activities that connect geometry and folk craft spanning centuries and cultures. Experiment with iPad apps to create equal and congruent shapes. Leave with classroomready materials.

## Sara Normington <br> Council of Presidential Awardees in Mathematics, Portland, Oregon

Lynn Patterson
Murray State University, Kentucky
Jennifer Rising
Council of Presidential Awardees in Mathematics, Chicago, Illinois
201 (Convention Center)

## 260 <br> Saving the Planet with Math <br> (3-8) Gallery Workshop

Being good environmental stewards and global citizens requires an understanding of math concepts, such as large numbers, growth patterns, measurement, probability, algebra, and more. Discover creative hands-on math activities that include science and social studies content about the world around us. Get a free CD of activities.

Lindsey Bailey
Population Connection, Washington, D.C.
704/706 (Convention Center)

## 2:45 P.M.-4:00 P.M.

## 261 <br> Making Sense of Algebra with Realistic Mathematics Education

## (6-8) Gallery Workshop

Realistic Mathematics Education (RME) is a philosophy of math education that has guided the Netherlands to two top-five Programme for International Student Assessment rankings in the past 10 years. Learn about RME and explore a series of informal, preformal, and formal tasks designed to support student understanding of algebra.

## Mieke Abels

Freudenthal Institute, Utrecht, the Netherlands
Michael S. Matassa
University of Colorado at Boulder

## Raymond Johnson

University of Colorado at Boulder
Mile High 3 A (Convention Center)

## 262 <br> Prop Up Problem Solving with Proportional Reasoning

(6-8) Gallery Workshop
Proportional reasoning is one of the most important middle school topics we teach. Create and use easy-to-manage, inexpensive to prepare, hands-on activities to help your students understand proportionality and its connections to many prealgebra topics.
Gail R. Englert
Blair Middle School, Norfolk Public Schools, Virginia
Centennial Ballroom E (Hyatt Regency)

## 263 <br> They're the Same but Different? Building Multiple Representations of Proportionality

(6-8) Gallery Workshop
Bring ratios to life with register tape, yarn, stickers, and more. Leave with hands-on, classroom-ready tasks focused on multiple representations of equivalent ratios. You will also discover the many connections between ratios, double number lines, proportionality, and graphing on a coordinate plane.

## Sami Briceno

Carnegie Learning, Pittsburgh, Pennsylvania
Kasey Bratcher
Carnegie Learning, Pittsburgh, Pennsylvania
603 (Convention Center)

## 264 <br> From Tilles to Equations: Algebraic Reasoning for All Learners <br> (6-12) Gallery Workshop

Come see how to use manipulatives, motion detectors, TI-Nspire handhelds, Internet resources, software, and TI-Navigator to investigate patterns and relationships that lead to understanding of algebraic concepts. We will show ways to engage all learners by using manipulatives and technology for instruction and assessment.

## Ruth Casey

Teachers Teaching with Technology, Frankfort, Kentucky
Margaret Bambrick
Volusia County Schools, DeLand, Florida
403/404 (Convention Center)

## 265 <br> mARTh: Using Creative Expression to Connect Students to Mathematical Concepts <br> (6-12) Gallery Workshop

Many young students say they don't get math. By using art in a project-based learning model, students can connect with mathematical topics in a visual, kinesthetic way. mARTh makes math fun, hands-on, and beautiful.
Hannah McNeill
Watershed School, Boulder, Colorado
503/504 (Convention Center)

## 2:45 P.M.-4:00 P.M.

## 266 <br> Solve Real Problems with Geometry and Algebra <br> (6-12) Gallery Workshop

Use right, acute, and obtuse angles to construct quadrilaterals and visually prove the Pythagorean theorem. Use circumference measurements, algebra, and reasoning to solve authentic bicycle racing problems. Apply genealogy and population growth to exponential equations so your students can mathematically predict the future.

Mary Kay Bacallao<br>Mercer University, Macon, Georgia

Mile High 3 C (Convention Center)

## 267 <br> Calculus Lab Time: Determining Volume for a Solid of Revolution <br> (9-12) Gallery Workshop

Use a common object with circular cross sections for a hands-on integral lab. Measure the object, calculate a piecewise function to model its radius, and use calculus to find volume. Compare your result with the volume by displacement. Using the 3-D object to find the 2-D generating curve strengthens visualization skills by reversing the usual approach.

## Karen Hyers

Tartan High School, Oakdale, Minnesota
Mineral Hall D/E (Hyatt Regency)

## 268 <br> Ideas for Revisiting Geometry Proofs in Algebra Class <br> (9-12) Gallery Workshop <br> Competent algebra students know whether two lines are parallel or perpendicular by looking at the slopes, but can these students also communicate how slope values connect to geometrybased proofs of parallelism and perpendicularity? Participate in activities that offer ways for algebra students to revisit geometric concepts and proofs.

Andre Mathurin<br>Bellarmine College Preparatory, San Jose, California

506/507 (Convention Center)

> 269
> Creatively Integrating Multiple
> Technologies Using Color: iPads, SMART Boards, TI-Emulators
> (9-12, Preservice and In-Service) Gallery Workshop
> Connect graph, table, equation, and words-interactively. Model equations on top of color photos. Cleverly use TI emulators for the 84 and Nspire CX. Incorporate iPad apps in your classroom effortlessly. Use color to distinguish concepts and make mathematical connections. Get the free TI Document Player. Obtain more than two hundred classroom-ready activities.

## Tom Reardon

Youngstown State University, Ohio
708/710/712 (Convention Center)

## 270 <br> Pirate Geometry

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

Investigate activities with a pirate buried treasure theme that you can use to teach rectangular, polar, spherical, and 3-D coordinate systems. The focus is on reasoning and problem solving while having fun playing games and solving pirate buried treasure puzzles.

Michael Serra
Author, San Francisco, California
Four Seasons 4 (Convention Center)

## 271 <br> The Standard Deviation: A Hands-On, Conceptual Approach

(9-12, Preservice and In-Service) Gallery Workshop
Discover a conceptual approach to calculate the mean and standard deviation by using color tiles. We will use a hands-on approach to create a concrete model of each step in calculating the standard deviation. We then discuss how these physical representations relate to the handwritten algorithms.
Melissa B. Hanzsek-Brill
St. Cloud State University, Minnesota

## Susan K. Haller

St. Cloud State University, Minnesota
Centennial Ballroom A (Hyatt Regency)

## 2:45 P.M.-4:00 P.M.

## 272 <br> Using High-Cognitive-Demand Tasks to Explore Reasoning and Proof

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

Engage with tasks around reasoning and proof and think about what makes a task challenging. We'll share our experiences with using the tasks with preservice and in-service teachers as well as share how these tasks worked with the teachers' students. We will discuss challenges in maintaining the high cognitive demand of the tasks while teaching.

## Rachael Eriksen Brown

Knowles Science Teaching Foundation, Moorestown, New Jersey
Jennifer L. Mossgrove
Knowles Science Teaching Foundation, Moorestown, New Jersey 406/407 (Convention Center)

## 273 NT

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, in their early career, or looking for help. Receive gifts, prizes, and good ideas.
David Barnes
National Council of Teachers of Mathematics, Reston, Virginia Mile High 1 E/F (Convention Center)

## 274

## Promoting Student Reasoning and Understanding by Using Representational Pathways

(Preservice and In-Service) Gallery Workshop
Representational pathways can be used to translate standards and content goals into instructional sequences that are student centered and more likely to support student understanding of mathematics. Collaboratively design representational pathways that you can use to inform instruction and assessment.

## David C. Webb

University of Colorado at Boulder
Centennial Ballroom G/H (Hyatt Regency)

## 3:30 P.M.-4:30 P.M.

## 275 FA <br> Building a Smarter Balanced Assessment System: Summative, Interim, and Formative <br> (General Interest) Session

The Smarter Balanced Assessment Consortium Theory of Action calls for full integration of the learning and assessment systems to support decision making and higher-quality instruction. Explore how the summative, interim, and formative components inform student progress with respect to the Common Core State Standards for Mathematics.

## Gail M. Pagano

Connecticut State Department of Education, Hartford
Four Seasons 2/3 (Convention Center)

## 276 <br> Developing Metacognition: The Key to Successful Problem Solving

(General Interest) Session
How do students successfully access and transfer relevant mathematical knowledge to new problems? Successful problem solvers are metacognitive-they know how to think as they plan, monitor, and evaluate their solutions. Explore strategies to support students' development of metacognitive problem-solving skills with the authors of an NCTM book.

## Kathy Ernst

Consultant, West Brattleboro, Vermont

## Sarah Ryan

University of Delaware, Newark
705/707 (Convention Center)

## 277 <br> Increasing Equity Awareness and Transforming Practice <br> (General Interest) Session <br> President Series Presentation <br> Teachers of all students, particularly underrepresented students, need to be well versed in a variety of instructional strategies that teach concepts and skills at appropriate grade levels, are suitable to overcome any language barriers, and focus on the Standards for Mathematical Practice. I will share ideas, strategies, and activities.

Don S. Balka
TODOS: Mathematics for ALL, LaPaz, Indiana
605 (Convention Center) Workshop

3:30 P.M.-4:30 P.M.

## 278 됴

## Learn $\leftrightarrow$ Reflect Reflection Session

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

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

Mile High 1 C/D (Convention Center)

## 279 <br> Math and Geography: Using Google Earth to Investigate Mathematics

(General Interest) Session
Google Earth is more than virtual field trips. See demonstration lessons on measurement, algebra, data analysis, geometry, and more, accessible through this free resource. Leave with engaging and real-world application lessons you can use immediately, for grades 1-8.

## Hillary Wolfe

Teacher Created Materials Publishing and Shell Education, Huntington Beach, California

## Karie Feldner Gladis

Teacher Created Materials Publishing, Huntington Beach, California

Centennial Ballroom D (Hyatt Regency)

## 280

## Mathematical Practices:

An Opportunity for English Language Learners
(General Interest) Session
Asking students to "construct viable arguments and critique the reasoning of others" presents a challenge to English language learners, but it also offers an opportunity to develop language skills. We will examine tasks at various grade levels to identify language and mathematical demands and opportunities for students.

## Ana E. England

University of California, Santa Cruz
107/109 (Convention Center)

# 281 <br> Mathematizing the World: Seeing Reasonable Math All Around Us <br> (General Interest) Session <br> Mathematizing-the quantification of things happening all around us, such as music, sunlight, rain, and coffee-enables construction of mathematical understanding that lasts. Consider the pervasive nature of math and, more important, the role of recognizing this presence in constructing understanding. Leave with a set of examples and ideas. <br> <br> Mark Roddy <br> <br> Mark Roddy <br> Seattle University, Washington <br> Mile High 4 A/B (Convention Center) 

## 282 RtI <br> Progress Monitoring in Mathematics: Applications for Response to Intervention <br> (General Interest) Session

We will focus on progress monitoring within response to intervention. I will show measures for progress monitoring, and we'll discuss considerations for selecting measures. I will also share case studies illustrating the use of progress monitoring to support individual students in Tier 2 and Tier 3 interventions.

Anne Foegen
Iowa State University, Ames
501/502 (Convention Center)

## 283

## The Gamification of Math: Research,

 Gaming Theory, and Math Instruction(General Interest) Session
This session draws on recent cognitive research to dissect and demonstrate the potential power (and pitfalls) of tapping gaming theory for math teaching and learning. What does it mean to leverage adaptive leveling, immediate feedback, transparent progress, and intriguing math tasks to build resiliency and conceptual and procedural fluency?

## Alex Sarlin

Educational Technology and Gaming Consultant, Brooklyn, New York

David Dockterman
Harvard Graduate School of Education, Cambridge, Massachusetts
Mile High 4 E/F (Convention Center)

3:30 P.M.-4:30 P.M.

## 284 <br> What Is Mathematical Reasoning, Anyway? <br> (General Interest) Session

Although mathematical reasoning is a ubiquitous concept in math education, it is rarely defined. What is mathematical reasoning, and in what sense(s) should we nurture it as math educators? Drawing on scholarly research and examples from practical classroom lessons, I present a thought-provoking account of mathematical reasoning.
Carlos Rodriguez Johns Hopkins University Center for Talented Youth, Baltimore, Maryland

203 (Convention Center)

## 284.1 <br> Making iPad Part of the Math Equation

(General Interest) Session
iPad inspires creativity and hands-on learning by bringing math concepts to life. Explore math apps, books, and educational content available to revolutionize student learning. Learn to create engaging Multi-Touch content by using iBooks Author and iTunes $U$. See how these tools help transform the way teachers teach and the way students learn.

Speaker To Be Determined
205 (Convention Center)

## 285

## Building Bridges:

Math and Literature for All Students
(Pre-K-5) Session
I will introduce mathematical concepts through children's literature. Students will experience mathematical ideas in real-world situations. This integration enhances the learning of every child and offers a smooth introduction to the learning of mathematical concepts.

## Sally C. Mayberry

Florida Gulf Coast University, Fort Myers
207 (Convention Center)

## 286 <br> Mastering Mental Mathematics Is Core: Number Facts and Beyond <br> (Pre-K-5) Session

Mental mathematics is an essential life skill and core for higher mathematics. It begins with a focus on a proven way to learn number facts. This foundation stresses thinking strategies that can extend to greater numbers. I will outline the steps to develop the strategies for number facts and beyond as well as show practical examples.

## Calvin Irons

Queensland University of Technology, Brisbane, Australia Four Seasons 1 (Convention Center)

## 287 <br> Engaging Reluctant Problem Solvers: How Do You Do It?

(3-5) Session
Do you have students who are reluctant to engage in math? My previous work has shown the potential of tasks without words to engage reluctant problem solvers. Come learn about other specific tasks to help students become less reluctant to engage in the mathematics classroom.

Sydney Margaret Holbert
University of Mississippi, Oxford
Centennial Ballroom B/C (Hyatt Regency)

## 288 <br> Reasonin', wRitin", and aRithmetic: The New 3 Rs

(3-8) Session
Writing can develop students' mathematical reasoning skills in grades $3-8$, and this session illustrates the types of writing assignments that help students learn most effectively. Sample worthwhile questions and examples of the results are included to guide teachers' use of this approach.

Bob Drake
University of Cincinnati, Ohio
Lynn Columba
Lehigh University, Bethlehem, Pennsylvania
Mile High 2 C (Convention Center)

3:30 P.M.-4:30 P.M.

## 289 <br> Math Classroom Routines That Support Reasoning

(6-8) Session
Students are expected to understand numbers and the meanings of operations, compute fluently, reason, and make reasonable estimates. The Common Core State Standards have raised expectations for middle school students. Explore routines that help students think flexibly about number and meet the expectations of the Common Core State Standards.

Genni Steele
Math Solutions, Sausalito, California
Le'Vada Gray
Math Solutions, Sausalito, California
108 (Convention Center)

## 290

## STEM Is Hot in Hot Springs

(6-8, Preservice and In-Service) Session
What do geothermal energy, melting ice, dentistry, disease, and flight have in common? All are core concepts in integrated science, technology, engineering, and mathematics (STEM) lessons developed by rural Montana teachers. Video, photos, and student work illustrate how multidisciplinary teams bring standards and STEM to life in the classroom.

## Jennifer Luebeck

Montana State University, Bozeman
405 (Convention Center)

## 291 <br> Reasoning about Quantities That Change Together

(6-12) Research Session
Students can draw on informal reasoning and life experience to make sense of quantities and their relationships. I will share student work along with video episodes of middle and high school students reasoning about quantities that change together. Learn ways to support and inquire into your students' reasoning.

## Heather Lynn Johnson

University of Colorado Denver
Centennial Ballroom F (Hyatt Regency)

## 292 <br> Using Teacher- and Student-Made Videos in the Mathematics Classroom

## (6-12) Session

Fascinated by YouTube videos and Khan Academy? Wonder how people do that? Explore the use of software to create your own videos for student learning and assessment. The effective use of software for this purpose can help to differentiate instruction and reach diverse populations of students.

## Janet B. Andreasen

University of Central Florida, Orlando
Deborah McGinley
Orange County Public Schools, Orlando, Florida

## Zyad Bawatneh

University of Central Florida, Orlando
601 (Convention Center)


## 3:30 P.M.-4:30 P.M.

## 293 <br> Is That Always True?

(9-12) Session
By investigating geometric problems informally with interactive geometry software, students often asked, "Is that always true?" Motivating proof in this way engaged students in proving. I will share classroom examples and experiences.

## William Caroscio

Retired, Elmira Southside High School, New York
709/711 (Convention Center)

## 294 <br> Learn It First, and then Prove It (9-12) Session

For students, proving something in mathematics may be likened to crossing a raging river. If we first provide a lifeline to the other side, the student is less likely to be swept away. Come see how you can do this, from the quadratic formula in algebra 1 through identities in trig to the fundamental theorem in calculus.
Paul A. Foerster
Alamo Heights High School, San Antonio, Texas
401/402 (Convention Center)

## 295 <br> Playful Projects

(9-12) Session
Teachers at the Boston Arts Academy are teaching the traditional math frameworks but also trying to explore the beauty, playfulness, and art in math. We will share some playful assignments and discuss how to develop and assess open-ended assignments. Projects include Functional Art, Songwriting Statistics, and Quadratic Rockets.
Mark J. Lonergan
Boston Arts Academy, Massachusetts
Ibeth Jaime
Boston Arts Academy, Massachusetts
Tess Mandell
Boston Arts Academy, Massachusetts
102 (Convention Center)

## 296 <br> Rainforests and Fast Food: Modeling Deforestation with a TI-Nspire

(9-12) Session
Explore rainforest loss and America's love affair with fast food by using a TI-Nspire to model data and draw interesting conclusions.

## Chris Henderson <br> Lawrence County Board of Education, Moulton, Alabama

Capitol Ballroom 4 (Hyatt Regency)

## 297 <br> Real Math, Real Life: A Course for High School Students

(9-12) Session
Explore a new type of high school course available for free online. The new course emphasizes the real-life applications of mathematics and requires no algebra. Topics include business and consumer math, taxation, probability, statistics, sports and fitness, and patterns in nature.

## Ron Larson

Pennsylvania State University, Erie
Mile High 3 B (Convention Center)

## 298

## Preservice Teachers' Mathematics Education Perceptions

## (Higher Education) Session

Aspiring K-8 teachers often have misconceptions about the mathematics knowledge and skill required to become a teacher. In a three-course math sequence at a historically black university, preservice teachers develop the conceptual knowledge needed to teach mathematics. We examine their evolving perceptions and discuss the findings.

Nicola D. Edwards-Omolewa<br>Delaware State University, Dover<br>Kathleen M. Fick<br>Methodist University, Fayetteville, North Carolina<br>Delayne Y. Johnson<br>Delaware State University, Dover

702 (Convention Center)
3:30 P.M.-4:30 P.M.

## 300

## Professionall Development Integrating Mathematical and Teaching Practices

(Preservice and In-Service) Session
We present a distinctive form of professional development experience for elementary teachers focused on teaching practices and mathematics practices, featuring Web-based materials for facilitators and teachers. Explore these materials and discuss the benefits and challenges of this form of practice-based professional development.

## Timothy A. Boerst

University of Michigan, Ann Arbor
Meghan Shaughnessy
University of Michigan, Ann Arbor
Kara Suzuka
University of Michigan, Ann Arbor
703 (Convention Center)

## 301 <br> Raising Awareness of the Opportunity Gap in Mathematics Classrooms <br> (Preservice and In-Service) Session <br> Opportunity gaps exist in the quality of mathematical tasks and discourse provided to students from a variety of backgrounds. We will discuss an activity used with our preservice teachers, along with their work, to highlight the increased awareness of such gaps that preservice and in-service teachers might gain after engaging in this exercise.

## Kelly W. Edenfield

Carnegie Learning, Pittsburgh, Pennsylvania

## Wendy B. Sanchez

Kennesaw State University, Georgia
505 (Convention Center)

## 4:00 P.M.-5:00 P.M.

## 301.1 ew <br> Improving Student Success <br> through Better Engagement: MathXL for School <br> (General Interest) Exhibitor Workshop <br> Through rich multimedia resources, MathXL for School allows middle and high school teachers to focus on important aspects of teaching, such as measuring learning outcomes, while students receive a personalized learning experience with immediate feedback, interactive learning aids, and practice, practice, practice.

## Pearson

Upper Saddle River, New Jersey
301 (Convention Center)
301.2 CW
"Opening" Developmental Mathematics: New Resources for New Approaches
(General Interest) Exhibitor Workshop
Discover media-rich, open educational resources to support new instructional models. Produced with a generous Gates Foundation grant and distributed through the nonprofit NROC Project, this new program aims to open doors to educational and career opportunities for financial-disadvantaged learners struggling with mathematical literacy.

## NROC

Marina, California
303 (Convention Center)

### 301.3 CW

Math Buddies: The Digital Singapore Math Solution in Action
(Pre-K-5) Exhibitor Workshop
Learn how teachers are effectively integrating Math Buddies in school to make teaching math easier. The latest K-5 digital curriculum from Marshall Cavendish Education, Math Buddies is well aligned with the Common Core State Standards and integrates multimedia with instructional pedagogy from our Singapore Math texts—Math in Focus and Primary Mathematics.

Marshall Cavendish Education Tarrytown, New York

304 (Convention Center)

### 301.4 CW <br> Conquer Times Tables in Only Three Weeks-Guaranteed

(3-8) Exhibitor Workshop
Take part in the fun, multisensory, hands-on approach of teaching the times tables in only three weeks. Learn to teach $10 \mathrm{~s}, 11 \mathrm{~s}$, and 12 s in less than one minute. You'll see other Common Core State Standards-aligned products to teach addition, subtraction, and division.
Rhymes ' $n$ ' Times
Lewisville, Texas


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## Here's what's going on:

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Discover how simple it is to turn your ideas into articles.
Presented by Sara-Lynn Gopalkrishna, MTMS editor

Thursday, April 18:
10:40-10:55 a.m. and 1:10-1:25 p.m.

Friday, April 19:
10:30-10:45 a.m. and 1:50-2:05 p.m.

## Be a Journal Referee

Find out how critiquing manuscripts can help your career.
Presented by Albert Goetz, MT editor

Thursday, April 18:
11:05-11:20 a.m. and 1:35-1:50 p.m.

Friday, April 19:
10:55-11:10 a.m. and
2:15-2:30 p.m.

## Avoid Writing Pitfalls

Learn hints on steering clear of those pesky manuscript potholes.
Presented by Beth Skipper,
TCM editor
Thursday, April 18:
11:30-11:45 a.m. and
2:00-2:15 p.m.
Friday, April 19:
11:20-11:35 a.m. and
2:40-2:55 p.m.

## Minds on Mathematics <br> Using Math Workshop to Develop Deep Understanding in Grades 4-8

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## HIGHLIGHTS

Iris M. Carl Equity Address (Presentation 411)
NCTM Business Address (Presentation 460)
NCTM Immediate Past President's Address (Presentation 513)
New Teacher Celebration (Presentation 595)

## ICON LEGEND

| EW Exhibitor Workshops | 353.1, 353.2, 353.3, 353.4, 409.1, 409.2, 409.3, 409.4, 457.1, 457.2, 457.3, 457.4, 486.1, 486.2, 486.3, 486.4, 542.1, 542.2, 542.3, 542.4, 594.1, 594.2, 594.3, 594.4 |
| :---: | :---: |
| FA Formative Assessment | 304.1, 369, 435, 474, 526 |
| 008 NCTM Committee Presentation | 566, 567 |
| NT New Teacher | 334, 345, 361, 397, 399, 414, 487, 496, 555, 593, 595 |
| RP Research in Proof | 304, 360, 377, 428, 512 |
| Rt] Response to Intervention | 363, 413, 466, 514 |



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## REGISTRATION HOURS

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

EXHIBIT AND BUZZHUB HOURS

10:00 a.m.-6:00 p.m.

## FIRE CODES

[^2]> 8:00 A.M.-9:00 A.M.

## 302 <br> Convince Me: Coaching Tools to Support Effective Questioning and Discourse

(General Interest) Session

Questioning and discourse are crucial in supporting student development of the Common Core State Standards Mathematical Practices. We will share and discuss tools to use in professional development and the coaching cycle related to questioning and discourse. You will leave with a collection of tools.

## Maggie B. McGatha

University of Louisville, Kentucky
Jennifer M. Bay-Williams
University of Louisville, Kentucky

## Jon Wray

Board of Directors, National Council of Teachers of Mathematics; Howard County Public Schools, Ellicott City, Maryland

> Centennial Ballroom D (Hyatt Regency)

## 303 <br> ICME-12 Report on Second-Language Learners

(General Interest) Session
Learn from participants at the 2012 International Congress on Mathematical Education in South Korea, sharing what they learned from mathematics educators in other countries about teaching mathematics to second-language learners.

David Bressoud
Macalester College, Saint Paul, Minnesota
Mile High 2 C (Convention Center)

## 304 BP

## The Teaching and Learning of Proof: Research Insights

## (General Interest) Session

We will discuss research concerning the teaching and learning of proof, as well as give an overview of the day's proof-focused presentations and respond to questions.

## E. Paul Goldenberg

Education Development Center, Waltham, Massachusetts

## Patricio Herbst

University of Michigan, Ann Arbor

## Eric Knuth

University of Wisconsin-Madison
Mile High 1 C/D (Convention Center)

### 304.1 EA

PARCC: An Interactive Progress Update

## (General Interest) Session

A representative from the Partnership for the Assessment of Readiness for College and Careers, a 23 -state consortium building assessments based on the Common Core State Standards, will share the latest news on the consortium's work, allowing ample time for questions and answers.

## Doug Sovde

Achieve Inc., Washington, D.C.
Four Seasons 1 (Convention Center)

## 305 <br> Commonsense Number-Sense <br> Strategies for Pre-K-Grade 1 Students

(Pre-K-2) Session
Subitizing, number lines, and linear board games are all linked to development of number sense in young learners. Explore strategies to develop number sense by working with "circle number lines," board games, "foamies," and sequenced "subite" challenges that make learning fun and engaging.

## Ken Newbury

Young People's Press, San Diego, California
703 (Convention Center)

## 306 <br> Adopting Singapore Math: A Case Study

(Pre-K-5) Session

Six years ago, Keys School in Palo Alto, California (K-8), adopted Singapore Math. We will present data, experiences, and film clips of math classes. We will summarize the overwhelming benefits of Singapore Math, the obstacles we had to overcome, and the best methods of implementing this acclaimed math curriculum.

## Kathleen Jalalpour

Keys School, Palo Alto, California

## Corrinne Lieu

Keys School, Palo Alto, California

8:00 A.M.-9:00 A.M.

## 307

## A Roadmap for Building Fluency with Fractions

(Pre-K-5) Session
To be good at fractions, kids need to develop a specific set of skills and abilities. We'll identify what those skills are, which Common Core State Standards are crucial at each grade level, and how teachers can use number lines and other tools to give students a better, more intuitive understanding of fractions.

## Greg Tang

Scholastic, New York, New York
Four Seasons 2/3 (Convention Center)

## 308 <br> From STEM to STEAM: The Arts and Creativity in Math

(Pre-K-5) Session
Young students need to be excited about math. They need to be fully engaged in creating math models, making up math stories, doodling and sketching, and using multiple means of expression to think about math. Let's work together to get the arts-artistic expression and creative thinking-into our everyday math instruction.
Stuart J. Murphy
Author, Boston, Massachusetts
605 (Convention Center)

## 309 <br> Lesson Study: Teacher Insight into the Common Core State Standards Mathematical Practices

(Pre-K-5) Session
Lesson study offers a unique opportunity to help teachers unpack the meaning of the Common Core State Standards math practices to improve their classroom instruction. Watch selected video clips showing the growth of teachers engaged in this learning goal, and witness how they discovered strategies to better reach the needs of all students.

## Anne Nesbitt

Westport Public Schools, Connecticut

## Allison Moran

Westport Public Schools, Connecticut
Nancy Kovacic
Westport Public Schools, Connecticut
Capitol Ballroom 4 (Hyatt Regency)

# 310 <br> Standards for Mathematical Practice in Elementary School Classrooms 

(Pre-K-5) Session

Previewing a new book from NCTM, we will draw connections among the Standards for Mathematical Practice, the NCTM Process Standards (NCTM 2000), and the strands of proficiency from Adding It Up (National Research Council 2001). A highlight of the session will be discussing how to implement the mathematical practices in elementary school classrooms.

Mathew D. Felton<br>University of Arizona, Tucson<br>Courtney A. Koestler<br>University of Arizona, Tucson

Centennial Ballroom B/C (Hyatt Regency)

## 311 <br> Maximizing Learning during Mathematical Discourse: Teaching Children Argument and Critique <br> (3-5, Preservice and In-Service) Session

Learn strategies to invigorate mathematical discourse and inspire productive argumentation and critique for all students. Analyze video footage of classroom discourse and practice new techniques while reflecting on ways to increase the effectiveness of discourse. We will focus on social behaviors, discourse procedures, and raising expectations.
Claudia M. Bertolone-Smith
Douglas County School District, Minden, Nevada
Teruni Lamberg
University of Nevada, Reno
Marlene Moyer
Douglas County School District, Minden, Nevada
207 (Convention Center)

## 312 <br> Developing Spatial Sense in 3-D <br> (3-8) Session

Explore tasks that engage students in solving problems involving regular solids. These tasks develop students' spatial sense as they work with the array structure of three-dimensional objects.

## Sandy Davis Trowell

Valdosta State University, Georgia
Anne Reynolds
Kent State University, Ohio
501/502 (Convention Center)

## 8:00 A.M.-9:00 A.M.

## 313 <br> Pump Up the Volume (Measurement)

(3-8) Research Session
Discover new ways to enhance your volume measurement instruction with hands-on tasks. We will share video of students engaged in nonroutine tasks designed to promote understanding of what volume formulas mean and why they work. Investigate students' strategies and leave with new volume tasks that will help you enact the Common Core State Standards in your classroom.

## Cheryl L. Eames

Illinois State University, Normal
Melike Kara
Illinois State University, Normal
Jeffrey E. Barrett
Illinois State University, Normal
203 (Convention Center)

## 315 <br> Coteaching in the Algebra Classroom

(6-8) Session
I will share coteaching strategies that worked in the algebra classroom for students of various ability levels. I will also model effective coteaching strategies and skills.

Erin K. Colantonio
Hatboro-Horsham School District, Horsham, Pennsylvania
Mile High 4 A/B (Convention Center)

## 316 <br> Understanding Infinity: Cantor's Diagonal Proof for Middle School Students <br> (6-8) Session <br> Infinity is fascinating, yet students rarely learn much about it until college. Can we teach infinity meaningfully to younger students? Explore several ways to incorporate ideas of infinity, including countable versus uncountable sets and Cantor's diagonal argument, into middle-grades classrooms.

## Amber Wagner

Johns Hopkins Center for Talented Youth, Baltimore, Maryland

## Alden Moylan

Johns Hopkins Center for Talented Youth, Baltimore, Maryland
108 (Convention Center)

## 317

## Building Engineers in Middle School through STEM Activities

## (6-8, Preservice and In-Service) Session

STEM education challenges teachers to integrate science, technology, engineering, and math concepts into the classroom. Learn about the engineering design process and identify how students can implement it to engage in hands-on activities in engineering. See how to develop math students into strong engineers.
Mary C. Enderson
Old Dominion University, Norfolk, Virginia
Mile High 3 B (Convention Center)
317.1

The Panoramic View of Eighth-Grade Algebra
(6-12) Research Session Equity Strand Presentation
This study captures the voices of eighth-grade students experiencing algebra for the first time. Uniquely, this study chronicles a fundamental change in the lives of urban middle school students while also addressing who and what thrives or withers under educational mandates.
Lesa M. Covington Clarkson
University of Minnesota, St. Paul
Quintin Love
University of Minnesota, St. Paul
709/711 (Convention Center)

## 318 <br> Constructing Beams and Modeling with Algebra

(6-12) Session
Students develop algebraic thinking by constructing beams, analyzing data, finding patterns, and representing patterns with recursive and explicit equations.
Amber R. Severson
Anoka-Ramsey Community College, Cambridge, Minnesota
Erin R. Richgels
North Pole High School, Alaska
Glen W. Richgels
Bemidji State University, Minnesota
Centennial Ballroom F (Hyatt Regency)

## 319

## Ending Algebraic Misconceptions: <br> Building Correct Knowledge by Showing Incorrect Examples

## (6-12) Research Session

In alignment with the Common Core State Standards, using worked examples with self-explanation tasks uses reasoning skills and can increase learning in algebra 1 courses. We will highlight incorrect examples. Learn about two projects that used these strategies in classrooms and how you can apply them to your own classroom.

## Karin E. Lange

Temple University, Philadelphia, Pennsylvania

## Kelly M. McGinn

Temple University, Philadelphia, Pennsylvania
Julie L. Booth
Temple University, Philadelphia, Pennsylvania
Mineral Hall F/G (Hyatt Regency)

## 320

## Proportion: Ratio = Ratio

(6-12) Session
What is in the clusters for both grades 6 and 7 of the Common Core State Standards, a foundational basis for understanding percents and much of algebraic thinking and scientific reasoning? Ratio and proportion. Join us to explore effective teaching strategies, problem types, and research on teaching and learning ratio and proportion.

## Mary Ann Matras

East Stroudsburg University, Pennsylvania
505 (Convention Center)

## 321

## How Big Is a Carbon Footprint?

(9-12) Session
Earth is getting warmer. How do we know? Explore how mathematical reasoning, in the form of modeling, supports the claim of global warming and gives insight into how to counteract it. Use concepts from algebra and statistics to investigate how individual actions can have significant consequences.

## Benjamin J. Galluzzo

Shippensburg University, Pennsylvania

## Jean M. McGivney-Burelle

University of Hartford, West Hartford, Connecticut

## Rikki Wagstrom

Metropolitan State University, Saint Paul, Minnesota
205 (Convention Center)

## 322 <br> Making Sense of Similarity

## (9-12) Session

Here are some classroom-tested activities and investigations that can deepen student understanding of similarity, a much-misunderstood concept at the core of geometry and of advanced mathematics. We will make important connections between similarity and arithmetic, fractions, proportions, algebra, and trigonometry.

## Loring Coes

Rocky Hill School, East Greenwich, Rhode Island
405 (Convention Center)

## 323 <br> Nspiring Investigations of Quadrilaterals and Their Properties <br> (9-12) Session <br> Participants will use the Geometry utility on the TI-Nspire handheld to construct various quadrilaterals and dynamically transform them to explore properties of the quadrilateral family. We will focus on an interactive approach to enhance your students' abilities to visualize and conjecture, using reasoning to prove properties they have discovered. <br> Ilene Hamilton <br> Retired, Adlai Stevenson High School, Lincolnshire, Illinois

107/109 (Convention Center)

## 324 <br> Overcoming Challenges to Develop Mathematically Promising Students in Urban Schools

(9-12) Session
We will (1) explore cultural and social issues in urban schools to serve the needs of mathematically promising students better, (2) develop strategies to keep up with the changing dynamic in math classrooms and strengthen students' belief and ability to do well in mathematics, and (3) help students develop their mathematical potential fully.

## Pinghsiu Lee

Houston Independent School District, Texas
102 (Convention Center)

8:00 A.M.-9:00 A.M.

## 325 <br> Reasoning and Proof on the SAT

(9-12) Session
How can students demonstrate their ability to reason and to prove statements on a standardized test such as the SAT? How can they construct viable arguments and critique the reasoning of others? How does the SAT address the Standards for Mathematical Practice of the Common Core State Standards? Come hear the answers to these questions and more.
Robin K. O'Callaghan
The College Board, New York, New York

## Andrew D. Schwartz

The College Board, New York, New York
601 (Convention Center)

## 326 <br> Technology: A Portal to Exploration and Discovery

(9-12, Higher Education) Session
Technology affords unique opportunities for exploration and discovery and fosters the development of greater in-depth understanding. Experience how this is possible when investigating the meanings of fractional exponents and logarithms. Technology enables the connection between the two to be made effectively and efficiently.
Kenn L. Pendleton
Montgomery College, Germantown, Maryland
705/707 (Convention Center)

## 327 <br> Van Hiele through Volume

(9-12, Preservice and In-Service) Session
Using the case study of volume, we will step through the Van Hiele levels of thought. Using physical and instructional technology (3-D modeling), we will go from a wet "level one" demo through multiple perspectives on Cavalieri's principle (levels three and four), finishing up with abstraction to non-Euclidean volume.

## Lloyd Hugh Allen

Baltimore County Public Schools, Towson, Maryland
401/402 (Convention Center)

## 328 <br> Making Elementary Mathematics Accessible to English Language Learners

(Preservice and In-Service) Session
Like all students, English language learners (ELLs) must learn and develop proficiency in mathematics. But at the same time they must interpret English and share mathematical thinking in English. Learn strategies to teach mathematics concepts together with language to ensure that ELLs learn mathematical concepts with accurate meaning.

## Anne M. Goodrow

Rhode Island College, Providence

## Lisa B. Owen

Rhode Island College, Providence
Mile High 4 E/F (Convention Center)

## 329 <br> Preservice Teachers' Multicultural Mathematics Dispositions toward Latino Students

(Preservice and In-Service) Session
Equity Strand Presentation
We will define multicultural mathematics dispositions and describe a cultural awareness unit. Join us to discuss preservice teachers' openness to Latino culture to learn mathematics, awareness of how Latino culture differs from their own, and commitment to using culturally responsive teaching. We will also share recommendations for teacher education.

Dorothy Y. White
University of Georgia, Athens
Victor L. Brunaud-Vega
University of Georgia, Athens
Angel M. Carreras-Jusino
University of Georgia, Athens
Mile High 2 A (Convention Center)

## 330 <br> Japanese Manipulatives Develop Reasoning and Proof in the Primary Grades <br> (Pre-K-2) Gallery Workshop

Learn how the Japanese manipulative kit helps develop students' number sense and mathematical reasoning in the primary grades. Participate in hands-on activities using Japanese manipuatives to learn how students reason through and represent problem situations and decomposition strategies to enact content and practices from the Common Core State Standards.

Mary N. Leer
VERA Consulting, LLC, Lancaster, Pennsylvania
Makoto Yoshida
William Paterson University, Wayne, New Jersey
Mile High 1 A/B (Convention Center)

## 331 <br> M3: Making Measurement Meaningful <br> (Pre-K-2) Gallery Workshop <br> Experience hands-on, Standards-based activities that facilitate developing measurement concepts. Participate in interactive activities that explore measurement attributes such as length, capacity, and area and the associated tools while correlating with the Common Core State Standards. <br> Latrenda Knighten <br> Board of Directors, National Council of Teachers of Mathematics; East Baton Rouge Parish School System, Louisiana

Centennial Ballroom E (Hyatt Regency)

## 332 <br> Stop! Help! I Thought You Understood Multistep Word Problems

(Pre-K-2) Gallery Workshop
This interactive presentation will focus on the concrete and representational forms of multistep problem-solving techniques.
Engage in making sense of practical problems that address students' misconceptions. We will investigate students' inappropriate use of operations.

## Laura Gray

Norfolk Public Schools, Virginia
Brenda Dorman
Norfolk Public Schools, Virginia
607 (Convention Center)

## 333

## How Many Aliens? Developing Algebraic Thinking in the K-6 Classroom

(Pre-K-5) Gallery Workshop

Participate in an early algebraic learning experience for the K-6 level. Through manipulatives, representations, and collaboration, we will do an interactive minilesson based on spaceships and aliens, showing how rich mathematical tasks lay the foundation for algebraic thinking such as number sense and mathematical reasoning.

## Wayne Snyder

Claremont Graduate University, California
Lorelei Coddington
Claremont Graduate University, California

## Kristen Baldridge

Claremont Graduate University, California
506/507 (Convention Center)

## 334 <br> Prepar制局 for the Work of Effective Mathematics Instruction

(Pre-K-5) Gallery Workshop
There are practices central to the daily work of teaching. Advanced, intentional planning is essential to effective mathematics instruction. Explore how to actively engage students. We will emphasize selection and implementation of worthwhile tasks.

## John Sutton

RMC Research Corporation, Denver, Colorado
Arlene P. Mitchell
RMC Research Corporation, Denver, Colorado
406/407 (Convention Center)

## 335 <br> Successful Mathematics Programs in Title I Elementary Schools

(Pre-K-5) Gallery Workshop
This program will feature two Colorado Distinguished Title I Schools: Montview Math and Health Science Elementary School, in Aurora, Colorado, and Heritage Elementary, in Pueblo,
Colorado. These schools have implemented successful elementary school mathematics programs in schools with many families living in poverty.

## Gail Pauley

Office of the Superintendent of Public Instruction, Special Programs and Federal Accountability, Olympia, Washington

Nancy Konitzer
Arizona Department of Education, Phoenix
Mile High 4 C/D (Convention Center)

## 336

## Do Operations with Integers Sink Your Students' Boat?

## (3-8) Gallery Workshop

Turn a sinking boat into a game about adding and subtracting integers. Learn this and three other specialized board game activities that model all operations with integers. You will also see how you can change the rules of the games to emphasize or reinforce specific concepts. We will share all materials along with examples of student work.

## Aran Glancy

University of Minnesota, Minneapolis
Young Rae Kim
University of Minnesota, Minneapolis

## Tamara J. Moore

University of Minnesota, Minneapolis
104/106 (Convention Center)

## 337 <br> Exploring Reasoning and Communication with Problems from Singapore Classrooms

(3-8) Gallery Workshop

Experience mathematical reasoning and communication by solving problems taken from Singapore classrooms. Learn three strategies to enhance reasoning and communication: the use of questions, concrete materials, and visuals. We will use geometry and measurement problems across grade levels.

## Ban Har Yeap

Marshall Cavendish Institute, Singapore, Singapore
Capitol Ballroom 5-7 (Hyatt Regency)

## 338 <br> What Does Number Sense for Fractions Look Like?

## (3-8) Gallery Workshop

We will share student videos and classwork to describe what fraction number sense looks like for how students with number sense order fractions, estimate fraction addition and subtraction, and explain how to operate with fractions meaningfully. We will share activities to support number sense.

## Kathleen Cramer

University of Minnesota, Minneapolis
Terry Wyberg
University of Minnesota, Minneapolis
Christina Miller
University of Minnesota, Minneapolis
111/113 (Convention Center)

## 339 <br> Is There Another Way to Teach Fraction Division?

(6-8, Preservice and In-Service) Gallery Workshop
Division by fractions (Common Core State Standards, grade 6 ) is typically taught from a quotitive view: $2 / 3$ divided by $1 / 4$ becomes, "How many $1 / 4 \mathrm{~s}$ are in $2 / 3$ ?" The partitive view works well in many instances, and most students can readily understand it. Come test out these strategies, models, and activities for your classroom.

## Sarah K. Westbrook

Georgia College and State University, Milledgeville

## Joy Black

University of West Georgia, Carrollton
Mile High 2 B (Convention Center)

## 340 <br> Standards for Mathematical Practice: Planting the SEED of Success <br> (6-8, Preservice and In-Service) Gallery Workshop

Actions speak louder than words. Experience proven strategies for addressing the Common Core State Standards for Mathematical Practice. Learn questioning techniques to promote conceptual understanding and procedural fluency, while creating the context to enable students to reason mathematically and construct proofs.

William J. Glee
Project SEED, Berkeley, California

## Tim Davidson

Project SEED, Berkeley, California
403/404 (Convention Center) Assessment

## 341 <br> Using Technology to Drive Inquiry in Mathematics

(6-8, Preservice and In-Service) Gallery Workshop

How can technology foster inquiry in mathematics? We will share cognitively demanding mathematical tasks that rely on technology to promote mathematical inquiry.

## Leigh Haltiwanger

Clemson University, South Carolina

## Bob Horton

Clemson University, South Carolina
503/504 (Convention Center)

## 342 <br> Connect Four! Linking Graphical, Numerical, Algebraic, and Written Representations

## (6-12) Gallery Workshop

Using sets of cards, we will match graphs, tables of values, equations, and written descriptions of a variety of functions, including quadratic, polynomial, rational, radical, trigonometric, and exponential/logarithmic. See how to create your own set of cards by using the TI emulator and The Geometer's Sketchpad.

## Greg Faulhaber

Cincinnati Country Day School, Ohio
Centennial Ballroom A (Hyatt Regency)

## 343

## Cups, Ropes, and Licorice: Making Sense of Rate of Change

(6-12) Gallery Workshop
Do you have a hard time making the connection between slope and rate of change in your algebra class? We will use cups, ropes, and licorice to demonstrate slope and rate of change, and you will leave with several concrete, hands-on ideas for teaching rate of change. We will use TI-84 calculators.

Jennifer M. Campbell
Wicomico County Public Schools, Salisbury, Maryland Mineral Hall A-C (Hyatt Regency)

## 344 <br> Investigations of Paper Folding and Regular Polygons

## (6-12) Gallery Workshop

We will investigate the paper-folding activities found in chapter 4 of Mathematical Reflections: In a Room with Many Mirrors. First we will dive right into the procedures of the FAT (fold and twist) methods of folding regular polygons. We will explore this concept both on paper and with GeoGebra software.
Edward M. Knote
University of Central Florida, Orlando
Evonne Pankowski
Broward County Schools, Pines Middle School, Florida
103/105 (Convention Center)

## 345 NT

## Motivating Students by Sparking Curiosity about the "Whys" in Mathematics

## (6-12) Gallery Workshop

Do you ever wonder how you can motivate students to ask you why a rule works in mathematics? Engage in a mathematical activity that shows how to easily spark students' curiosity about mathematics. I will also offer examples and resources to bring back to the classroom.

## Angie Hodge

University of Nebraska, Omaha
Mile High 1 E/F (Convention Center)

## 346

## Reasoning and Sense Making with At-Risk Students: It's Possible

(6-12) Gallery Workshop
Do you ever wonder how you can possibly teach the Common Core State Standards, reasoning and sense making, and the curriculum that your at-risk students need? We'll look at activities guaranteed to engage your at-risk learners in reasoning and sense making while you address your curriculum.

## Jenny Salls

Washoe County School District, Reno, Nevada
Christine D. Thomas
Georgia State University, Atlanta
Mineral Hall D/E (Hyatt Regency)

8:00 A.M.-9:15 A.M.

## 347

## Alternative Assessments in Geometry

(9-12) Gallery Workshop
Definitely not your traditional paper-pencil tests. The assessments include a scavenger hunt, photo search, and origami. Content assessed includes special segments of a triangle with points of concurrency, transformational geometry, and areas of regular and nonregular polygons. Bring laptops with The Geometer's Sketchpad and we will model the hunt.
Janet C. Kagan
Hononegah High School, Rockton, Illinois
Mile High 3 C (Convention Center)

## 348 <br> A Very Sweet Introduction to Recursion, Reasoning, and Sense Making <br> (9-12) Gallery Workshop

We will share mathematical questions, based on a simple algorithm for sharing candy, that offer students an opportunity to use recursion and a graphing calculator to obtain answers and results that are astonishing. The sharing of candy leads to a surprising equilibrium that can be used as the basis of a reasoning and sensemaking activity.

Laurie Bass
Ethical Culture Fieldston School/Prentice Hall, Bronx, New York Four Seasons 4 (Convention Center)

## 349

## Common Core State Standards

 Statistics: What Nonstatisticians
## Should Know

(9-12) Gallery Workshop
The Common Core State Standards encourage us to teach statistical ideas in our high school math courses. Many of these ideas will be unfamiliar to teachers not well versed in statistics. We will carry out simulations that you can use in the classroom and will discuss how they can help students understand important statistical concepts.

Julie L. Graves
North Carolina School of Science and Mathematics, Durham
201 (Convention Center)

## 350 <br> Discrete Mathematics for High School: A Problem-Based Approach

(9-12) Gallery Workshop

High school discrete math courses traditionally cover a range of topics, everything from fractals to statistics. College-level discrete math courses are more focused on mathematics associated with computer science. A problem-based approach introduces high school students to topics such as number theory, combinatorics, Boolean algegra, and proofs.

## Mike Pugliese <br> Arvada West High School, Colorado

Mile High 3 A (Convention Center)

## 351 <br> What's So Cool about Sierpinski?

(9-12) Gallery Workshop
Want to build the amazing Sierpinski tetrahedron and really learn the mathematics behind it? Explore fractals and compare the volume of the Sierpinski tetrahedron and its complement while creating what you have seen in pictures. Take away an engaging lesson and resources. We will also share feedback from when students were challenged to think.
Rachelle D. Meyer
Baylor University, Waco, Texas
Shandi Spruill
Mesquite High School, Texas
Trena L. Wilkerson
Baylor University, Waco, Texas
704/706 (Convention Center)

## 352 <br> Using Video Clubs to Examine Student Thinking about Algebra

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

Video clubs are a powerful way for teachers to work with colleagues to explore student thinking. Experience a new video club professional development program designed to foster substantive discussion of the teaching and learning of algebra. Explore tips to create and sustain video clubs.

## Miriam Sherin

Northwestern University, Evanston, Illinois
Elizabeth Dyer
Northwestern University, Evanston, Illinois
Janet Walkoe
Northwestern University, Evanston, Illinois
708/710/712 (Convention Center)

## 8:00 A.M.-9:15 A.M.

## 353 <br> Math SDI: Simply Do It

(Preservice and In-Service) Gallery Workshop
Specially designed instruction (SDI) is what makes special education special. Many teachers have students with an individualized education program for part of the school day. With the implementation of the Common Core State Standards, how are we to accelerate the learning of all $\mathrm{K}-12$ students with math disabilities? Explore many ways to simply do it.

## Karen Campbell

Green River Regional Educational Cooperative, Bowling Green, Kentucky

Mark E. Helton
Central Kentucky Special Education Cooperative, Lexington
603 (Convention Center)

## 8:30 A.M.-9:30 A.M.

## 353.1 ew <br> Reach the Depths of Common Core State Standards with an Integrated Learning Approach

## (General Interest) Exhibitor Workshop

Pearson Forward, a new K-5 instructional system, fosters math achievement starting in Kindergarten, by providing teachers with the tools to nurture thinking and academic success. The Common Core State Standards-aligned program, funded through a federal i3 grant, helps students reach a deeper understanding in math through integration of key subject areas and skills.

## Pearson

Upper Saddle River, New Jersey
301 (Convention Center)

## 353.2 ew

## Meaningful Math Models in the Common Core State Standards

(Pre-K-5) Exhibitor Workshop
Students use simple math drawings to show the mathematical aspects of a situation. Students make math drawings on their MathBoards, where parts of a drawing can be pointed to while a student explains his or her solution method. Math drawings incorporate several of the Mathematical Practices. Come learn about math drawings and other math models.

## Houghton Mifflin Harcourt

Boston, Massachusetts
353.3 ew

## Conquer Times Tables in Only 3 Weeks-Guaranteed

(3-8) Exhibitor Workshop

Take part in the fun, multisensory, hands-on approach of teaching the times tables in only three weeks. Learn to teach $10 \mathrm{~s}, 11 \mathrm{~s}$, and 12 s in less than one minute. You'll see other Common Core State Standards-aligned products to teach addition, subtraction, and division.

Rhymes ' $n$ ' Times
Lewisville, Texas
302 (Convention Center)

### 353.4 CW <br> What's New at HP: Unveiling Graphing Excellence

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

Attend the unveiling of HP's breakthrough calculator and discover new, exciting ways to approach mathematics learning. Receive free handouts, including a virtual calculator for PCs; one lucky winner will receive an exclusive class kit of HP's new calculator with 8 hours of virtual professional development training.

## Hewlett-Packard Calculators

Fort Collins, Colorado
303 (Convention Center)

9:30 A.M.-10:30 A.M.

## 354 <br> Essential Mindsets for Tilling the Soil for the Common Core State Standards

(General Interest) Session
With the game-changing nature of the Common Core State Standards, leadership from all of us is a nonnegotiable element to shepherd and support their implementation. This session will answer the questions, "How should we be positioning ourselves?" and "What must we be doing?" so that we do not squander this once-in-a-lifetime opportunity.

## Steven Leinwand

American Institutes for Research, Washington, D.C.
Four Seasons 1 (Convention Center)

## 9:30 A.M.-10:30 A.M.

## 355 <br> Fractions: The F Word in Mathematics

(General Interest) Session
We will focus on several aspects of fractions, including an indepth look into the problems caused by language and symbolism. See the bigger picture of fractions as well as strategies focused on operations with fractions, including why we invert and multiply by the reciprocal when we divide by a proper fraction.

## Concepcion Molina

SEDL, Austin, Texas
Capitol Ballroom 4 (Hyatt Regency)

## 356 <br> Reaching Girls Online: <br> Another Path to Math

(General Interest) Session

## Equity Strand Presentation

Explore strategies to reach girls online by providing resources, networking opportunities, and monitored social networks as a modern way to enhance girls' math learning and interest. We will address considerations for including parents and girls from varied backgrounds, and we will share useful resources.

Lynda R. Wiest
University of Nevada, Reno

## Stephanie Vega

University of Nevada, Reno
Heather Glynn Crawford-Ferre
University of Nevada, Reno
505 (Convention Center)

## 358

## A Rainbow of Problem-Solving Strategies Used by K-2 Students <br> (Pre-K-2) Session

View and discuss video clips of K-2 students doing mathematics. Students will be solving a variety of problem types identified in Common Core State Standards. Student explanations are thought provoking and may bring a smile, an aha, or even a wow. You will leave eager to listen to your students as they solve problems in your classroom.

## Linda L. Walker

Florida Center for Research in Science, Technology, Engineering, and Mathematics, Florida State University, Tallahassee

## Charity Bauduin

Florida Center for Research in Science, Technology, Engineering, and Mathematics, Florida State University, Tallahassee
Capitol Ballroom 1-3 (Hyatt Regency)

## 359 <br> How Classroom Discussion Promotes Functional Thinking in Grades K-2 <br> (Pre-K-2) Research Session

All students have important things to say, but how do we get them to share their thoughts? Engaging students in meaningful discussion creates a student-driven classroom that fosters deeper functional thinking. Explore functional thinking activities and questioning techniques that enable peer discussion via inquirybased questioning.
Angela Murphy Gardiner
TERC, Cambridge, Massachusetts
Barbara M. Brizuela
Tufts University, Medford, Massachusetts
709/711 (Convention Center)

## 360 RP

Babies, Brain Science, and Elementary Mathematics: Research We Can Use

(Pre-K-5) Session

Elements of number, arithmetic, symmetry, transformations, probability, and even algebra are built into us as babies or developed early. Learn some of what's known about language development; visual perception; and connections between emotion and memory, how it's been discovered, and how you can use it to support mathematics learning in grades $\mathrm{K}-5$.

## E. Paul Goldenberg

Education Development Center, Waltham, Massachusetts
207 (Convention Center)

9:30 A.M.-10:30 A.M.

## 361 NT <br> Common Core State Standards and Problem Solving: Cultivating Student Engagement <br> (Pre-K-5) Session

Develop mathematically proficient students by engaging them in well-designed tasks aligned with the Common Core State Standards for Mathematics. Investigate problems from geometry and data analysis, two important strands that require more emphasis. We will share student samples and ideas for 180 days of integrated problem solving.

Desiree Hertz
The Riverside School, Lyndonville, Vermont
Laurie Boswell
The Riverside School, Lyndonville, Vermont
401/402 (Convention Center)

## 362 <br> Pulling It All Together: <br> Integrated Unit Planning around Common Core State Standards

(Pre-K-5) Session
We can best teach the depth of the Common Core State Standards when they are integrated across the curriculum. Using literature, working on related mathematics, exploring relative science, examining social connections, and responding in writing can be overwhelming to lesson plan. Fortunately, the benefits of such teaching can be rewarding for both the teacher and students.

## Jamie Lynn C. Galgana

Clark County School District, Las Vegas, Nevada
Cyndi Giorgis
University of Nevada, Las Vegas

## Kelly Goodall

University of Nevada, Las Vegas
Mile High 3 B (Convention Center)

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## 9:30 A.M.-10:30 A.M.

## 363 But <br> Diagnostic Interviews: An Assessment for Targeting Interventions for Struggling Students

(3-5) Session
We will develop your understanding and use of diagnostic interviews to assess mathematics learning for at-risk students within a response to intervention model. We will share examples of diagnostic interviews linked to the Common Core State Standards as well as corresponding student responses.

## Amy Lingo

University of Louisville, Kentucky
Karen S. Karp
University of Louisville, Kentucky
Centennial Ballroom D (Hyatt Regency)

## 364 <br> Put on Your Math Goggles: <br> Seeing Mathematics in Art

(3-5) Session
Bring the Standards to life by exploring fractions in the artwork of Paul Klee and Wayne Thiebaud. Engage in applications of multiplication and algebra by using Alexander Calder's mobiles. Estimate and compute area and perimeter by using your own Mondrian-inspired masterpiece. Connect children's literature that features the visual arts to math concepts.

Robin A. Ward
Rice University School Mathematics Project, Houston, Texas
205 (Convention Center)

## 365 <br> Arithmetic Fluency and Differentiated Instruction through Alternative Algorithms

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

Alternative algorithms are culturally relevant and support differentiation. Nontraditional algorithms encourage flexible thinking, and students can use them to convince themselves and others that an answer is correct. Explore several alternative algorithms that support learning whole-number operations.

## Rachael M. Welder

Hunter College, New York, New York
Christine L. Latulippe
Norwich University, Northfield, Vermont
Mile High 4 E/F (Convention Center)

366

## What's the Big Idea? Inquiry Method Builds Understanding of Fractions

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

Explore problem-solving tasks to help third- and fourth-grade students develop deep understanding of basic fraction concepts. I will focus on implementing tasks in ways that build on children's natural ways of thinking, emphasize reasoning, promote student discourse, and confront common misconceptions.
Wendy S. Bray
University of Central Florida, Orlando
Mineral Hall F/G (Hyatt Regency)

## 367 <br> High-Impact Techniques for Asperger's in the Classroom <br> (3-8) Session <br> Finding high-impact math classroom techniques that enable Asperger's students to succeed with little additional teacher preparation time required is difficult. We will discuss specific techniques gleaned from teacher interviews, and targeted manifestations that each addresses, from choosing and executing strategies to explaining and showing work. <br> Debbie Gochenaur <br> Shippensburg University, Pennsylvania <br> Andrew Geesaman <br> Shippensburg University, Pennsylvania <br> Mile High 2 A (Convention Center)

## 368

Common Core State Standards Mathematical Practices in Action across the Middle Grades
(6-8) Session
Learn how to help middle grades students think deeply about math concepts by using the Mathematical Practices, particularly making sense of the math, constructing and critiquing arguments, and using structure. Explore algebra activities across the middle grades to better prepare students for Common Core State Standards-based curriculum and assessments.

Katherine Gavin
University of Connecticut, Storrs
Linda Jensen Sheffield
Northern Kentucky University, Highland Heights
Centennial Ballroom B/C (Hyatt Regency)

9:30 A.M.-10:30 A.M.

## 369 EA

## Formatively Assess Reasoning and Proof

(6-8) Session
Explore formative assessment strategies designed to gather evidence about whether students are developing reasoning and sense making. We will examine observation protocols, the role of conjectures, sample prior assessment items and exit cards, and appropriate interventions should major misconceptions become evident.

## Anne M. Collins

Board of Directors, National Council of Teachers of Mathematics; Lesley University, Cambridge, Massachusetts

$$
\text { Mile High } 1 \text { C/D (Convention Center) }
$$

## 370 <br> Huh? What Does That Mean? Good Math Questions

(6-8) Session
We will explore two kinds of questions. Good math problems use questions that are open ended and encourage divergent thinking and strategies. We will look at and analyze examples of good math questions. Good teacher questions can lead students to deeper understanding of concepts and additional connections. What are those questions?

Chadley Anderson
Davis County School District, Farmington, Utah 102 (Convention Center)

## 371

## Maintaining Motivation in Math: Easing the Transition to Middle School

## (6-8) Research Session

Many students find the transition to middle school math demotivating because the abstract concepts are disconnected from their daily experience. Explore how recent research on academic motivation relates specifically to math achievement and how these results can guide the design of interventions to help maintain high levels of motivation.
Robert G. M. Hausmann
Carnegie Learning, Pittsburgh, Pennsylvania
Steve Ritter
Carnegie Learning, Pittsburgh, Pennsylvania
601 (Convention Center)

## 372 <br> Singapore's Visual Models to Reason and Make Sense of Problems

## (6-8) Session

We will focus on the visual models and visualization used in the highly successful Singapore curriculum. These aspects offer students entry points to complex problems and develop deep understanding of topics such as operations with fractions, ratio, and algebraic manipulation. We will also discuss examples of their rich problems.

Andy Clark
Retired, Portland Public Schools, Oregon
705/707 (Convention Center)

## 373 <br> Uncommonly Engaging: Real-World Math, Critical Thinking, Critical Issues

(6-8, Preservice and In-Service) Session
Use real-world data to teach foundational algebra through problem-solving exercises similar to what students will encounter in their professional and personal lives. Receive researched-based materials that use real data about issues such as climate change, finance, or sustainable design to engage students with the math in their world and the Common Core State Standards.

## Dave Wilton

Facing the Future, Seattle, Washington
703 (Convention Center)

## 374 <br> Connecting Math and Music

## (6-12) Session

Rhythm, pitch, volume, and symbolic notation have strong connections to mathematics. Students are motivated to learn about music, and research shows that the academic study of music supports math achievement. Get an overview of the connections and many resources, as well as suggested classroom activities.

## Lew Douglas

The Lawrence Hall of Science, University of California, Berkeley
108 (Convention Center)

## 9:30 A.M.-10:30 A.M.

## 375 <br> Reasoning and Proof: The Role of Tasks and Questions

## (6-12) Session

How do we choose tasks that engage students in reasoning and proof? How do we make sure the questions we ask probe to find out what students are thinking or push them to make connections? Explore examples from algebra, geometry, and statistics, and consider how interactive dynamic technology can support student learning.

## Gail Burrill

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

Four Seasons 2/3 (Convention Center)

## 376

## Not the Math Students Hate

(9-12) Session

## Equity Strand Presentation

Students scream from the rooftops, "I hate math." Because of this presentation, teachers will be able to make functions, slope, transformations, and quadratics relevant to students. By making connections, students will see their retention level improve, and they might say to their friends, "I can prove the importance of math."

Frank R. Davis
DuSable Leadership Academy, Chicago, Illinois
405 (Convention Center)

## 377 BP

## The Many Roles of Proof in High School Mathematics

(9-12) Session
Building on research with focus groups of experienced teachers considering the functions that proof plays in mathematics, I discuss how teachers can incorporate proving in high school mathematics classrooms. Aided by research on cognition and classroom processes, I elaborate on how a teacher can navigate dilemmas and decisions that might ensue.

## Patricio Herbst

University of Michigan, Ann Arbor
203 (Convention Center)

## 378

## The Ubiquitous Particle Motion Question on the AP Calculus Exams

## (9-12, Higher Education) Session

They are on every AP calculus exam, yet they are in very few textbooks. The motion of a particle, a car, a rocket, and even the chief reader makes for questions covering the full range of calculus concepts. Learn how the questions are versatile and can start with a graph, an equation, or a table of values.

## Lin McMullin

Arkansas Advanced Initiative for Math and Science, Little Rock Mile High 2 C (Convention Center)

## 379 <br> Making Sense of a Stunning Approximation to the Sine Function

(9-12, Preservice and In-Service) Session
We will examine a little-known function that is a ratio of two quadratic functions. Discovered 1,400 years ago, it provides an exceptionally close approximation to the sine function. Using technology, we will see that the approximation is stunning. We will explore how to use the approximation as the basis of a reasoning and sense-making activity.

## Ron Lancaster

Ontario Institute for Studies in Education of the University of Toronto, Canada

Centennial Ballroom F (Hyatt Regency)

## 380 <br> Insights into a Three-Year Mathematics-Science Partnership <br> (Higher Education) Session

This presentation focuses on the results from an urban school, university mathematics-science partnership. We will present data from the teacher side of the desk and the student side of the desk. Although mathematics content was the project focus, pedagogical practices and student insights will provide a richer overview of the experience.
Tod Shockey
University of Toledo, Ohio
605 (Convention Center)

9:30 A.M.-10:30 A.M.

## 381 <br> Developing Proof through Advanced Number Theory: Promys for Teachers <br> (Higher Education, Preservice and In-Service) Session <br> Promys for Teachers is a six-week professional development program that uses number theory to immerse teachers in a culture of discovery. Analyze the structure used in the problem sets to promote teacher understanding and development of informal and formal proof and how that structure can be used in other content classes for teachers. <br> Mary Elizabeth R. Matthews <br> Boston University, Massachusetts <br> Matthew Chedister <br> Boston University, Massachusetts <br> 702 (Convention Center)

## 382

## Building Mathematical Connections between School and Home: <br> An Equity Approach

(Preservice and In-Service) Session
Equity Strand Presentation
Increase your equity awareness and enrich your instruction by learning strategies and activities that meaningfully involve students' ethnic and cultural heritage as part of their mathematical learning. Explore ways to create and maintain a working school-home relationship as an integral part of the mathematics classroom.

## Vessela Ilieva

Utah Valley University, Orem
107/109 (Convention Center)
 Assessment Presentation

9:30 A.M.-10:30 A.M.

## 383

## Curriculum, Cognition to Cultural Relevance: Bridges over Troubled Waters

(Preservice and In-Service) Research Session

## President Series Presentation

Explore findings and perspectives on (1) issues surrounding black children's lack of access to high-quality mathematics, (2) cognitive training and mathematics achievement, and (3) using culturally specific pedagogy to improve mathematics achievement.

Cheryl M. Adeyemi
Benjamin Banneker Association; Virginia State University, Petersburg

Lee V. Stiff
Past President, National Council of Teachers of Mathematics; North Carolina State University, Raleigh
Ebony O. McGee
Northwestern University, Chicago, Illinois
501/502 (Convention Center)

## 9:45 A.M.-11:00 A.M.

## 384

## Build Student Visual Schema for Solving Word Problems

(Pre-K-2) Gallery Workshop
Learn how to use interactive visual puzzles to offer all students access to word problems while promoting problem solving and algebraic thinking. Receive software and strategies to use in class for connecting visual models, word problems, and equations involving unknowns. Focus will be on K-2 addition and subtraction situations.

Erich Zeller
MIND Research Institute, Santa Ana, California
603 (Convention Center)

## 385 <br> Number versus Numeral: Developing the Concept of Quantity

(Pre-K-2) Gallery Workshop

How can I help my students understand the concept of number as quantity more deeply? Engage in hands-on/minds-on investigations of numeration and examine the relationship between quantity and the symbolic representation of number to support the implementation of the Common Core State Standards for Mathematics in pre-K-grade 2 classrooms.

Andria Disney
Chandler Unified School District \#80, Arizona
Capitol Ballroom 5-7 (Hyatt Regency)

## 386 <br> The Ripple Effect: Inspiring Problem Solving across Grade Levels

(Pre-K-2) Gallery Workshop
You have your data; now what? This hands-on gallery workshop includes iPads and lessons that bring the mathematical practices to life. Experience how analyzing data and collaborating across grades encourages student reasoning and communication. Walk away with tiered lesson plans, iPad apps, literature connections, and snack-tivities.

## Devin E. Anderson

Gahanna-Jefferson Public Schools, Gahanna, Ohio

## Renee L. Snyder

Gahanna-Jefferson Public Schools, Gahanna, Ohio
Susan M. Signet
Gahanna-Jefferson Public Schools, Gahanna, Ohio
Four Seasons 4 (Convention Center)

## 387

## How Big Is Big? <br> Primary Measurement Activities <br> (Pre-K-5) Gallery Workshop

Teachable moments are in every primary classroom. Integrate measurement into other curriculum areas to bring meaning and depth to your lessons. Songs, literature, maps, and more offer a perfect opportunity for measurement. Clear up common misconceptions and make the ruler real.
Jeanine L. Haistings
William Jewell College, Liberty, Missouri
Mile High 3 C (Convention Center)

## 9:45 A.M.-11:00 A.M.

## 388 <br> Minilessons That Maximize Numerical Reasoning <br> (Pre-K-5) Gallery Workshop

Wondering how to help your students develop numerical reasoning? Minilessons may be your answer. These brief, focused classroom conversations use representations, number strings, and questioning to develop number meanings, relationships, and operations. This gallery workshop demonstrates number minilessons and helps you develop your own.
Eula E. Monroe
Brigham Young University, Provo, Utah
Damon L. Bahr
Brigham Young University, Provo, Utah
104/106 (Convention Center)

## 389 <br> Spacing Out: Spatial Reasoning and the Common Core State Standards

(3-5) Gallery Workshop
Spatial reasoning seems to have disappeared during No Child Left Behind, but now it is back in the Common Core State Standards. Explore creative and fun activities that your students will love, first using paper and scissors, and later with iPad apps. The geometry standards will come alive for your students.

Jennifer Rising
Council of Presidential Awardees in Mathematics, Chicago, Illinois
Peggy McLean
Peggy McLean Consulting, San Carlos, California
Mile High 3 A (Convention Center)

## 390

## The Proof Is in the Fractions

(3-5) Gallery Workshop
Don't let fractions divide learning, multiply problems, or fracture your math thinking actions. Learn to survive, and take home ready-to-use games and activities that make fractions come alive. Engage student thinking by playing games that prove fraction number sense.

## Mary Petetti Doherty

Council Rock School District, Newtown, Pennsylvania
Linda Morrin
Council Rock School District, Newtown, Pennsylvania
201 (Convention Center)

391

## I'm Ready for English Language Learners in My Classroom

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

Engage in culturally responsive strategies for use with K-6 English language learners (ELLs). We will teach a math concept in a made-up language. After much laughter, assess strategies that helped you learn the math. Then take a grade-level math activity and apply the strategies to make it accessible to ELLs.
Eileen M. Cyr
Springfield College, Massachusetts
Caroline Murphy
Springfield College, Massachusetts
Elizabeth Miller
Springfield College, Massachusetts
Centennial Ballroom A (Hyatt Regency)

## 392

## Fractions Don't Have to Be Irrational

(3-8) Gallery Workshop
We will work with different models of fractions, examining and using both linear and area models. We will look at unit fractions as building blocks, equivalent fractions, decimals, and percents. The focus will be on making sense.

## AI Mendle <br> University of California, Davis

Mile High 1 A/B (Convention Center)

## 393 <br> Fractions, Decimals, and Percents: A Seamless Connection <br> (3-8) Gallery Workshop <br> Dividing? Move the decimal right? Left? What does this really mean? Connect fractions, decimals, and percents by using conceptual understanding, inspired by the Common Core State Standards, through mental math and hands-on activities you can use in your classroom tomorrow. These activities will encourage students to share ideas and critique each other's reasoning.

Kim Edelson
Deer Valley Unified School District, Phoenix, Arizona
JoAnn Bogner
Deer Valley Unified School District, Phoenix, Arizona
Mile High 2 B (Convention Center)

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394<br>Fun, Fun, Fun with Math Games<br>(3-8) Gallery Workshop

Wondering how to review number and operations, algebra, geometry, measurement, and probability and statistics in new and exciting ways? Join us to have fun, fun, fun with engaging games that incorporate a variety of mathematical concepts. Leave with classroom-ready games that will motivate students to use their math skills competitively.

## Susan Troutman

Rice University School Mathematics Project, Houston, Texas
Carolyn L. White
Rice University School Mathematics Project, Houston, Texas 406/407 (Convention Center)

## 395

## Regular Polygons with Fraction Circles

## (3-8) Gallery Workshop

Some Greeks constructed regular polygons by using tools other than ruler and compass. We follow this idea and use fraction circles (typically used in schools for fraction arithmetic) to construct and investigate properties of regular polygons. We also show how to quickly construct regular polygons with geometry software.

## Armando M. Martinez-Cruz

California State University, Fullerton
Jose Contreras
Ball State University, Muncie, Indiana
Patrick M. Kimani
California State University, Fullerton
Mineral Hall D/E (Hyatt Regency)

## 396 <br> Bar Modeling, Percent Decrease, and the Common Cold

(6-8) Gallery Workshop
For a STEM project, a team of middle and high school math and science teachers developed this lesson. It uses the investigative approach with an interactive computer simulation and the mathematical tool of a bar model to help students make sense of the variables that affect the spread of disease.

## Kathleen Hill

Bissell School, Whitefish, Montana

## Jennifer Luebeck

Montana State University, Bozeman
111/113 (Convention Center)

397 NT

## Interesting Probability Activities and Problems for the Classroom

## (6-8) Gallery Workshop

We will focus on probability problems and activities that you can use in the classroom. I will present introductory activities as well as challenging problem solving. See hands-on activities that you can use to teach theoretical concepts.
Rick Billstein
University of Montana, Missoula
503/504 (Convention Center)

## 398

## Irrational Numbers: Where Are You?

## (6-8) Gallery Workshop

What and where are irrational numbers? Why do we need them? We will discover the need for irrational numbers and find their approximate location on a number line. We will also make connections to the Pythagorean theorem and the square root function. You will also use rational number approximations to discover the irrational number pi.

Vivian F. Cyrus
Morehead State University, Kentucky
Christie A. Perry
Morehead State University, Kentucky
704/706 (Convention Center)

## 399 NT <br> Building Geometric Thinkers

(6-8, Preservice and In-Service) Gallery Workshop
Developing students' geometrical thinking is critical in helping them become proficient mathematicians; a strong foundation in geometry also has implications in algebra, measurement, and proportional reasoning. We will focus on hands-on explorations that support students' development of geometric thinking and reasoning.

## Cory A. Bennett

Idaho State University, Pocatello
Mile High 4 C/D (Convention Center)

9:45 A.M.-11:00 A.M.

## 400 <br> Playing with Blocks while Developing Algebraic Thinking <br> (6-8, Preservice and In-Service) Gallery Workshop <br> Develop mathematical understanding by making connections among arithmetic, geometry, and algebra through practical classroom activities. We will explore base-ten blocks, pattern blocks, plain blocks, and VisuAlgebra Blocks to create and discover algebraic relations. Explore thought-provoking activities you can use in your classroom.

## John F. McAdam

Marist College, Poughkeepsie, New York
Mile High 1 E/F (Convention Center)

## 401 <br> We Taught a Zoo

## (6-8, Preservice and In-Service) Gallery Workshop

Go beyond paper and pencil: get yourself a zoo. We will share lessons that use live animals as a means of collecting data we can then interpret mathematically. Beetles will help us explore distance-time graphs, and snails will show us the value of comparing with percent. We will share lesson plans and tips about classroom pets.

Lynn Kirby
University of Texas at Austin
Jason L. Ermer
University of Texas at Austin
110/112 (Convention Center)

## 402 <br> Stories and Technology: Providing Mathematics Opportunities for All

(6-12) Gallery Workshop
Language underpins the development of mathematical concepts. Through the union of storytelling and technological tools such as interactive whiteboards, PowerPoint, and Web-based assistive technologies, we will explore an interactive means to provide access to mathematics for all learners, including English language learners and students with learning disabilities.

## Dennis DeBay

Boston College, Chestnut Hill, Massachusetts
Karen L. Terrell
Boston Public Schools, Massachusetts
Neal McDonald
Boston Public Schools, Massachusetts
708/710/712 (Convention Center)

## 403 <br> The Right Path: Logic Puzzles That Build Spatial Reasoning

(6-12) Gallery Workshop
Path puzzles encourage solvers to use both logic and spatial reasoning. Learn about several kinds of path puzzles and hone your reasoning skills. We will also discuss how these puzzles support your curriculum and how to integrate them into your classroom. Bring a sharpened pencil and an open mind.
Jeffrey J. Wanko
Miami University, Oxford, Ohio
607 (Convention Center)

## 404 <br> Conjectures and Quadrilaterals: Proof versus Convince Me

(9-12) Gallery Workshop
In most geometry classes, students are asked to prove statements about quadrilaterals. Shouldn't a first step be for them to discover the properties of these figures? Before we ask the "p question" (prove to me), shouldn't we first ask the "c question" (convince $\mathrm{me})$ ? Come see how this can be accomplished with dynamic geometry on a calculator.

Ray Klein
Northern Illinois University, Dekalb
403/404 (Convention Center)

## 405

## Connecting Geometric Constructions to Mathematical Proof

(9-12) Gallery Workshop
Geometric constructions offer an excellent source to construct mathematical proofs to justify the constructions. Explore this relationship. Learn how to use a variety of construction tools, determine how they are the same and how they are different, and determine which are best for certain geometric constructions.
Anne Papakonstantinou
Rice University, Houston, Texas
Richard L. Parr
Rice University, Houston, Texas
Mineral Hall A-C (Hyatt Regency)

## 9:45 A.M.-11:00 A.M.

## 406 <br> Explore Real-World Relationships through Mathematical Modeling <br> (9-12) Gallery Workshop

Use data collection activities and real data sets (including data collected by scientists to monitor fish populations) to engage students and help them develop a better understanding of how mathematical models are used in the real world. We will graph data with the TI-Nspire CX and explore a variety of functions.

## Elizabeth Gasque

Retired, Charleston, South Dakota

## Judith Hicks

Retired, Arvada, Colorado
Centennial Ballroom E (Hyatt Regency)

## 407 <br> Incorporate Statistics into Algebra 2 by Using Laying the Foundation's Lessons

(9-12) Gallery Workshop
Learn an innovative method to introduce statistics concepts into an algebra 2 curriculum. Join us for a hands-on lesson that links function behavior and statistics through the use of histograms and other graphical displays. By using this strategy, you will be able to incorporate the high school Common Core State Standards for statistics across multiple courses.

## Lori Edwards

Laying the Foundation, a division of the National Math and Science Initative, Dallas, Texas

## Curtis Brown

Laying the Foundation, a division of the National Math and Science Initative, Dallas, Texas

103/105 (Convention Center)

## New to teaching?

Get answers to pivotal questions and concerns of new and soon-to-be teachers at the New Teacher Strand on Friday.

## 408

## Modeling Isn't Just for the Runway

## (9-12) Gallery Workshop

Gather data from simple experiments and create mathematical models. We will investigate constant, linear, quadratic, exponential, hyperbolic, and logistic models.

## Raymond Siegrist

State University of New York at Oneonta
506/507 (Convention Center)

## 409 <br> Digitizing Preservice Teachers' Voices of Mathematical Justification: Assessing Algebraic Thinking

(Preservice and In-Service) Gallery Workshop
Explore using assessment-for-learning strategies to develop preservice teachers' reasoning and sense-making habits of mind in algebra. Engage in a group problem-solving task, video-record the work, and assess justifications across groups by using digital tools. Bring your own laptops or iPads.

## Diane Rogers

Western Michigan University, Kalamazoo
Alden J. Edson
Western Michigan University, Kalamazoo
Christine A. Browning
Western Michigan University, Kalamazoo
Centennial Ballroom G/H (Hyatt Regency)

10:00 A.M.-11:00 A.M.

### 409.1 CW

Just-Right Problems
(General Interest) Exhibitor Workshop
Explore relationships between leveled problems and the Standards for Mathematical Practice. All students can experience success and engage in mathematical reasoning with leveled, right-sized problems. Learn how to adapt problems for various levels and help all students learn to justify their thinking. All problems address the Common Core State Standards for Mathematics.

Teacher Created Materials
Lexington, Massachusetts
302 (Convention Center)

10:00 A.M.-11:00 A.M.

### 409.2 CW <br> Analyze Data in the Cloud with StatCrunch

(General Interest) Exhibitor Workshop
StatCrunch offers a powerful Web-based solution for data analysis and exploration. This session will highlight basic functionality in the software along with strategies for sourcing new and exciting data. Also, users will have a look at the new applet builder within StatCrunch.

## Pearson

Upper Saddle River, New Jersey
301 (Convention Center)

### 409.3 CW

## New K-5 Math Curriculum for Building Mathematical Thinkers

(Pre-K-5) Exhibitor Workshop
Bridges in Mathematics, second edition, is a comprehensive K-5 curriculum that equips teachers to fully implement the Common Core State Standards in a manner that is rigorous, coherent, engaging, and accessible to all learners. Preview new materials, view video clips of actual lessons, and meet the program authors.

## Math Learning Center

Salem, Oregon
304 (Convention Center)

### 409.4 CW

## Do Word Problems Scare the Daylights out of Your Students?

## (3-8) Exhibitor Workshop

Find out how Hands-On Equations enables younger students to represent and solve word problems, visually and concretely by using game pieces, including advanced age and consecutive-integer problems.

## Borenson and Associates

Allentown, Pennsylvania
303 (Convention Center)

11:00 A.M.-12:00 P.M.

## 410 <br> iPad 1.1: What We Learned Our First Year

(General Interest) Session
Are you implementing iPads? Find out what we learned after our first year. Reproduce our successes and avoid our mistakes. Learn how to use the devices to create content that requires critical thinking and to promote mathematical literacy according to the Common Core State Standards. Learn management tips and tricks. iPads are so much more than apps.

## Shelly Moses

San Diego Jewish Academy, San Diego, California
Kelli Cox
San Diego Jewish Academy, San Diego, California
601 (Convention Center)


11:00 A.M.-12:00 P.M.

411


Keeping Our Eyes on the Prize
Iris M. Carl Equity Address (General Interest) Session
NCTM has committed itself to equity, with many of us working toward a new generation of mathematics-savvy citizens and STEM professionals representing our diverse population. We need to take stock of the record and take action from the state house to the classroom, so that our vision becomes reality and our hopes for our students are realized.

Philip "Uri" Treisman is professor of mathematics and of public affairs at the University of Texas at Austin, where he directs the Charles A. Dana Center. He is a senior adviser to the Aspen Institute's Urban Superintendents' Network and recently served on the 21st-Century Commission on the Future of Community Colleges. He was named a MacArthur Fellow in 1992 for his work on nurturing minority student achievement in college mathematics and 2006 Scientist of the Year by the Harvard Foundation of Harvard University for his outstanding contributions to mathematics. In all his work, Treisman advocates for equity and excellence in education for all children.

Philip Uri Treisman
Charles A. Dana Center, University of Texas at Austin
Four Seasons 2/3 (Convention Center)

## 412 <br> Math with a Conscience?

(General Interest) Session
Does applicable math always side with the rich and the powerful? Or can it help us create a better, more just world? Explore how an intentional focus on the social and ethical dimensions of math starting from such questions can enrich the classroom experience at all levels of the curriculum. I will share examples and tools for the classroom.

## Gizem Karaali

## Pomona College, Claremont, California

Mile High 1 C/D (Convention Center)

## 413 RtI

## Student-Centered Curriculum and Instructional Strategies That Support Struggling Learners

## (General Interest) Session

I will present results from research on supports needed for at-risk students in a constructivist mathematics environment. Classroom observation data identified areas where the curriculum and pedagogy posed specific challenges for struggling learners and suggested the potential supports that could help students access critical content and processes.

## Hannah Slovin

University of Hawaii, Honolulu
Capitol Ballroom 4 (Hyatt Regency)

## 414 NT <br> The Greatest Mathematics Teacher I Ever Knew: Inspiring Student Performance

(General Interest) Session
In this motivational message, we will examine the art of teaching. What are the characteristics of highly effective mathematics teachers? How do you efficiently balance effective lesson design and assessment demands of such a challenging and deeply rewarding profession?

Mona Toncheff
Phoenix Union High School District, Arizona
Timothy D. Kanold
Loyola University, Chicago, Illinois
107/109 (Convention Center)

415<br>Turning Student Errors into Deeper Mathematical Learning<br>(General Interest) Session<br>Ranging from elementary school number and operation through algebra, statistics, and calculus, this presentation will highlight examples of student work and offer constructive approaches for using it and the errors that frequently arise to help students learn mathematics in a deeper, more connected way.<br>\section*{H. Michael Lueke}<br>St. Louis Community College, Missouri<br>Capitol Ballroom 1-3 (Hyatt Regency)

## 416 <br> Build Number Sense with Visual Models and Games

(Pre-K-2) Session
Be more efficient and selective about time devoted to number. Explore number relationships by using visual models, including dot cards, ten frames, number lines, grids, and hundred charts. Leave with classroom-ready games and strategies, based on the Common Core State Standards, to help you enhance number sense and build confidence in your students.

## Laura Choate

Fallbrook Union Elementary School District, California
Mile High 2 A (Convention Center)

## 417 <br> Pump Up the Volume: Hands-On, Minds-On Measurement Tasks

(Pre-K-2) Session
To learn measurement concepts deeply, children must be actively doing, experimenting, and performing-not passively observing or filling out a worksheet. You'll leave this session with a fistful of real-world tasks for time, money, length, capacity, area, temperature, and weight.
Carrie S. Cutler
University of Houston-Downtown, Texas
705/707 (Convention Center)

## 418 <br> Teaching and Learning Equality in the Grades K-2 Classroom

(Pre-K-2) Session

Explore ways to support young children's development of equality. Engage in activities designed to develop an in-depth understanding of equality beyond the balance scale approach. I will show student work and videos and will supply a handout with ideas and activities for immediate implementation.

## Deborah Gordon

Arizona Deptartment of Education, Phoenix
Centennial Ballroom B/C (Hyatt Regency)

## 419 <br> Teaching the Common Core State Standards through Differentiated Instruction

(Pre-K-5) Session
Meeting the needs of all learners is a formidable challenge. Understanding what and how to differentiate enables us to meet this challenge. Explore the progression of skills within standards and how we can differentiate lessons. We will share instructional resources.
John J. SanGiovanni
Howard County Public School System, Ellicott City, Maryland
Kay B. Sammons
Howard County Public School System, Ellicott City, Maryland
501/502 (Convention Center)

## 420 <br> Learning through Representations: Integers and Fractions on the Number Line <br> (3-5) Research Session

Explore a curriculum unit that uses the number line as the context for a coherent treatment of integers and fractions. Lessons engage students in reasoning and communication about the big ideas of representing rational numbers on the line. Findings from an efficacy study offer evidence of the curriculum's effectiveness.

## Maryl Gearhart <br> University of California, Berkeley

Geoffrey B. Saxe
University of California, Berkeley
401/402 (Convention Center)

## 421 <br> The New 3 Rs: Reading, wRiting, and Reasoning

(3-5, Preservice and In-Service) Session
See how to use literature, writing, and reading to promote reasoning skills. Leave with Common Core State Standardsaligned engaging activities to extend math learning in a variety of subjects, while inspiring a love of math, writing, and problem solving-and be ready for the new 3 Rs.

## Charyl Kerns Hills

Council Rock School District, Newtown, Pennsylvania
Donna Pianoforte
Consultant, Newtown, Pennsylvania
703 (Convention Center)

## 422

## Becoming a Pattern Sniffer: Helping Students Learn through Inductive Reasoning

(3-8) Session
Looking for, extending, and generalizing patterns (inductive reasoning) is an important habit of mind for all students, particularly early algebraic thinkers. Explore ways to help students become pattern sniffers, highlighting how repeated reasoning emphasizes mathematical structure. We will also consider limitations.

Todd A. Abel
Appalachian State University, Boone, North Carolina
702 (Convention Center)

## 423 <br> Fractals: The Intersection of Math, Science, and Art

(3-8) Session
Fractals capture students' imagination, inviting them to explore patterns found in the world around them. Learn how you can use fractals as a springboard to explore number sense, area, perimeter, patterns, and algebra. Use the Illuminations Fractal Tool to explore the properties of self-similarity and have your students make their own fractal.

Shephali K. Chokshi-Fox<br>Middleboro Public Schools, Massachusetts

## Victoria L. Miles

Middleboro Public Schools, Massachusetts
709/711 (Convention Center)

## 424 <br> Fraction Conversations: Effective Questioning and Technology Tools to Improve Instruction

(3-8) Session
It's all about asking the right questions and listening to students. We will describe a successful professional development project supporting teachers in improving effective mathematical classroom discussions grounded in key Common Core State Standards fractional concepts with technology tools. We will also share implementation process materials.

## Mary Elizabeth Mendenhall

Griffin RESA (Regional Educational Service Agency), Griffin, Georgia

Lauri Susi
Conceptua Math, Petaluma, California
Centennial Ballroom D (Hyatt Regency)

## 425 <br> Linking Bar Diagrams and the Standards for Mathematical Practice

## (3-8) Session

This highly interactive presentation teaches bar diagramming, a powerful, visual-logical problem-solving strategy focused on reasoning. You'll draw bar diagrams to represent and solve several word problems. Through the lens of the Standards for Mathematical Practice, you'll see how bar diagramming develops mathematical proficiencies.
Robyn Silbey
Robyn Silbey Professional Development, Gaithersburg, Maryland Mile High 2 C (Convention Center)

## 426 <br> Easy Absolute Values? Absolutely. <br> (6-8) Session <br> Most students can tell you that the absolute value of a number is positive. However, many do not understand the concept itself. Explore absolute value as the distance from zero. This basic starting point will offer an easy-to-understand method to solve absolute value equations and inequalities. <br> Sharon Taylor <br> Georgia Southern University, Statesboro

108 (Convention Center)

11:00 A.M.-12:00 P.M.

## 427 <br> How Do I Build/Sell Thee? Let Me Count The Ways

(6-8) Session
Discover a multidimensional approach to learning about perimeter, area, and volume by building a home from start to finish within a budget. Through paper and computer models, students explore these concepts while creatively constructing a home they then try to sell. View projects and leave with ideas about how to use this project with your class.

## Ilene Kanoff

The Newton School, South Strafford, Vermont
Mineral Hall F/G (Hyatt Regency)

## 428 RP

Proof in Middle School?

## (6-8) Session

Although proof is typically not considered an essential part of middle school mathematics, in this session we will question that assumption, and examine ways of providing students with opportunities to engage in proving and fostering the development of their learning to prove.

## Eric Knuth

University of Wisconsin-Madison
205 (Convention Center)

## 429

## Developing Fraction Sense and Proportional Reasoning with ActionConsequence Applets

(6-8, Preservice and In-Service) Session
Investigate a suite of applets designed to develop understanding of fractions and proportions. We will consider how applets and well-posed questions can engage students in reasoning about mathematics. Also, we will examine student work for evidence of understanding.

## Wade Ellis

West Valley College, Saratoga, California

## Gail Burrill

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

Thomas Dick
Oregon State University, Corvallis
203 (Convention Center)

## 430 <br> Engaging with Existence Proofs in Middle and High School Classrooms

(6-12) Session

Spice up your middle or high school class with this collection of existence proofs. We will share tasks to challenge your students to think about propositions that can be proved with one example. To address the appropriateness of each proof strategy, we will compare these tasks with propositions that cannot be proven by example.

## Christine P. Trinter

Virginia Commonwealth University, Richmond
Joe Garofalo
University of Virginia, Charlottesville
Barbara Kitchell
University of Virginia, Charlottesville
Mile High 4 A/B (Convention Center)

## 431 <br> No More Excuses: Reaching Students of Various Abilities through "Flipping"

(6-12) Session
Are your students engaged during class? We will share our experience flipping math classes at various ability levels. Students watch our notes online for homework and spend class time deep in exploration and practice. We combined the forces of Livescribe, Jing, Google, and Khan Academy to teach our students. Learn how to do this in your classroom.

## Karen Strader

Framingham High School, Massachusetts
Ilana B. Marcus
Framingham High School, Massachusetts
Stephanie Adams
Framingham High School, Massachusetts
505 (Convention Center)

A special thank-you to all volunteers who have assisted with the Annual Meeting


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## 433 <br> Anchors Away: Problems to Engage Your Students

(9-12) Session
Students need engaging activities that set the stage for a new unit. Rich problems can serve as anchors that can also be revisited in different contexts throughout the school year. We will explore several examples of anchor problems that promote reasoning and sense making and cut across the conceptual categories, from functions to geometry.

## Daniel J. Brahier

Bowling Green State University, Ohio
Four Seasons 1 (Convention Center)

## 434 <br> Engaging Students and Addressing Standards in a Multiplayer Online Game

(9-12) Session
Immerse yourself in MIT's virtual game world that engages high school math students. Learn how the game addresses the Common Core State Standards and gives real-time teacher feedback about student learning. Sign your class up to play.

## Louisa Rosenheck

The Education Arcade, Massachusetts Institute of Technology, Cambridge

Susannah Gordon-Messer
The Education Arcade, Massachusetts Institute of Technology, Cambridge

102 (Convention Center)

## 435 FA <br> Knowing What Students Know and Using It <br> (9-12) Session <br> I will describe the crucial features of formative assessment in mathematics classrooms to know what students know. I will show how to use what they know to make sound instructional decisions based on learning progressions and research on student misconceptions. We will discuss example learning progressions and associated formative assessment tasks.

## Karen D. King

National Science Foundation, Arlington, Virginia
Mile High 3 B (Convention Center)

## 436 <br> Flipping Calculus <br> (9-12, Higher Education) Session

We will describe our experiences flipping calculus. We will discuss the technology and logistics involved as well as the benefits and challenges of this pedagogy. See and discuss a sample of short videos and collaborative in-class activities. We will also share preliminary student and instructor survey data.

## Jean M. McGivney-Burelle

University of Hartford, West Hartford, Connecticut
Larissa Schroeder
University of Hartford, West Hartford, Connecticut

## Mako Haruta

University of Hartford, West Hartford, Connecticut
405 (Convention Center)

## 437

## Supporting Beginning Teachers through Online Social Communities

(Higher Education, Preservice and In-Service) Session
Explore how to cultivate a supportive community for beginning mathematics teachers through online collaborative environments. Discuss how to engage beginning teachers in professional development opportunities, reflection, and research-based practices.

## Emily Thrasher

North Carolina State University, Raleigh
Ayanna Franklin
North Carolina State University, Raleigh
605 (Convention Center)

## 438 <br> Is It True—Always? Supporting Reasoning and Proof-Focused Collaboration among Teachers <br> (Preservice and In-Service) Session

Teachers often collaborate through examining data. How often do those data allow you to examine students' ability to reason and prove? Explore several tools that collaborative teams can use to support analyzing classroom instruction and assessment with a lens on supporting students to develop convincing arguments.
Nicole Rigelman
Portland State University, Oregon
Centennial Ballroom F (Hyatt Regency)

11:00 A.M.-12:00 P.M.

## 439 <br> Math in Cahoots with Science

(Preservice and In-Service) Session
Explore hands-on activities, projects, and student-designed experiments that illustrate the connections between middle grades science and math. We will emphasize mathematical concepts that support scientific investigation, such as rates, ratios and proportions, probability and statistics, surface area, volume, and measurement.

## Laurie Jordan

Loyola University at Chicago, Illinois

## Steven Jordan

University of Illinois at Chicago
Mile High 4 E/F (Convention Center)

## 11:30 A.M.-12:00 P.M.

## 440

## Learn How Great Math Lessons Become Presidential Awards

(General Interest) Burst
Recipients of the Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) will share how they each took a quality math lesson and turned it into a meeting with the president of the United States, a $\$ 10,000$ award to use at their discretion, and many state and national leadership opportunities.

Marilyn Suiter
National Science Foundation, Arlington, Virginia

## Sandra Trevino

National Science Foundation, Arlington, Virginia
Cindy Hasselbring
National Science Foundation, Arlington, Virginia
201 (Convention Center)

## 441 <br> Teach Students How to <br> Think Mathematically <br> (General Interest) Burst

Learn how to incorporate the I-Think problem-solving framework in any classroom. It encourages students to analyze a problem, consider solution strategies, monitor their efforts, and justify solutions. I-Think promotes oral and written discourse guided by a graphic organizer, with guiding questions and prompts, for students working in groups.

## Sararose DeVore Lynch

Westminster College, New Wilmington, Pennsylvania
Jeremy M. Lynch
Slippery Rock University, Pennsylvania
Mile High 1 E/F (Convention Center)

## 442 <br> What Does Your Mental Number Line Look Like?

(Pre-K-2) Burst
Ann Gervasoni (Australian Catholic University) names "Development of a Mental Number Line" as one of seven keys that open doors for students who struggle with mathematics. Learn how students develop a mental number line, activities that support the use of a mental number line, and implications for future success with numeracy tasks.

Marci A. Hellman
Jeffco Schools, Golden, Colorado
708/710/712 (Convention Center)

## 443 <br> Using Problem Solving to Assess Young Children's Mathematical Knowledge <br> (Pre-K-2, Preservice and In-Service) Burst <br> Learn to select and use problem-based tasks to assess children's thinking as they develop problem solutions. See examples of preschool, kindergarten, and primary grade children's approaches.

Shirley A. Leali
Weber State University, Ogden, Utah
Rosalind N. Charlesworth
Weber State University, Ogden, Utah
Mile High 2 B (Convention Center)

11:30 A.M.-12:00 P.M.

## 444

## Crash Course in Math Fact Fluency

(Pre-K-5) Burst
Wherever you look-the Common Core State Standards, Texas Essential Knowledge and Skills, NCTM Curriculum Focal Points, National Math Advisory Panel-a spotlight is turned on math fact fluency. This presentation summarizes your key need-to-know information: what fact fluency is, how it is assessed, and research-supported methods for its development.

## Betty Korte

ExploreLearning, Charlottesville, Virginia
111/113 (Convention Center)

## 445 <br> "Math, Math, It's Better Than a Bath": Encouraging Mathematical Playfulness

(Pre-K-5) Burst
Help your students see math as playful and fun by introducing silly schoolwide math contests that appeal to children's senses of drama and whimsy. Have children create math jokes, math poems, and math comic strips; help them put on math-related skits and perform math cheers. Prizes may even be awarded. Be there or be a right-angled rhombus.

## Stephen Currie

Poughkeepsie Day School, New York
603 (Convention Center)

## 445.1

## Lions, Zebras, Cheetahs, and Graphing

(3-5) Burst
Come on a math safari as you learn about an exciting project that combines math and writing. We'll have furry, feathery fun as we enjoy actual students' writing and samples of the innovative graphs they created to illustrate facts about their animals. You'll develop ways to create your own zoological mathematics experience for your students.

## Ann Nagda

Macmillan Children's Books, New York, New York
Mile High 3 A (Convention Center)

## 446 <br> Delivering a Fully Differentiated Math Lesson

## (3-8) Burst

Despite the universal acceptance that no classroom contains a group of learners with identical needs, the actual task of providing a lesson that addresses the myriad of needs appears, at times, insurmountable. This presentation will show how to plan and deliver a fully differentiated and inclusive math lesson.

## Yvonne Catherine Reilly

Sunshine College, Australia
Jodie Maree Parsons
Staughton College, Melton, Australia
103/105 (Convention Center)

## 447 <br> Movie Making in Math <br> (3-8) Burst

Students take an active part in learning new skills when they create their own short videos explaining concepts and giving examples. See how one fourth-grade class created an easily accessible resource of videos to reinforce their learning.

Catherine W. Greenslade
St. George's Independent School, Germantown, Tennessee
Mile High 3 C (Convention Center)

## 447.1 <br> MoMath and the Rosenthal Prize Results

(6-8) Burst
We will briefly update you on the newly opened National Museum of Mathematics. We will also describe the educational activities submitted by the winner and finalists in the 2012 Rosenthal Prize for Innovation in Mathematics Teaching, and we will let you know how to learn more about the activities and apply for the 2013 Prize.

## Glen Whitney

Museum of Mathematics, New York, New York
Cindy Lawrence
Museum of Mathematics, New York, New York
Mile High 4 C/D (Convention Center)

## 448

## The Hunger Games: What Are the Chances?

(6-8) Burst
Learn an activity that engages students by using the mathematics behind the wildly popular adolescent literature book The Hunger Games. Aligned with the Common Core State Standards for Mathematical Practice, The Hunger Games offers an exciting, meaningful, and standards-based context for getting students to think about probability.

## Sarah B. Bush

Bellarmine University, Louisville, Kentucky
Karen S. Karp
University of Louisville, Kentucky
Mile High 1 A/B (Convention Center)

## 449 <br> Learning Partners

(6-8, Preservice and In-Service) Burst

Relationships and math understanding are gained when middle school students and preservice teachers exchange work and ideas. Preservice teachers gain practice with genuine student work and questioning, and middle schoolers gain another perspective. I will share ideas of high-level problems and how to arrange this partnership.
Cathleen M. Malotka
Saginaw Public Schools, Michigan
406/407 (Convention Center)

## 450 <br> Dynamic Euclid: Using GeoGebra to Construct and Present Geometric Proofs

(9-12) Burst
Using GeoGebra, a free and open-source software program, you can easily construct and dynamically present geometric proofs. Learn how to construct Euclidean geometric proofs, present the constructions dynamically, and share creations with secondary students or the global community of GeoGebra users.

## Jeffrey Hall

Mercer University, Atlanta, Georgia
503/504 (Convention Center)

451

## Using Origami Boxes to Explore Concepts of Geometry and Calculus

(9-12) Burst

Learn how you can use a simple origami box to explore important concepts in geometry and calculus.

## Arsalan Wares

Valdosta State University, Georgia
607 (Convention Center)

## 452 <br> Teacher-Student Interactions in College Calculus Classrooms and Office Hours <br> (9-12, Higher Education) Research Burst <br> Learn findings of research on how two college calculus teachers interacted with students in classrooms and office hours. Conversation analysis on classroom data revealed teachers' ways to implicitly convey when students had opportunities to talk. The students were more engaged and took an active role during office hours. <br> Jun-Ichi Yamaguchi <br> University of Georgia, Athens

403/404 (Convention Center)

## 453 <br> Incorporating Different Learning Styles into Online College Statistics Courses <br> (Higher Education) Burst

Activities that have been successfully used in the traditional classroom can be creatively translated to the online environment while addressing the three learning styles. This presentation will guide professors who are new to the virtual classroom and want statistics classes that energize students with an excitement for learning.

Judi A. Ink
Regent University, Virginia Beach, Virginia
Elisabeth Suarez
Regent University, Virginia Beach, Virginia
506/507 (Convention Center)

11:30 A.M.-12:00 P.M.

## 454

## Attracting and Retaining High-Quality

 Mathematics Teaching Majors(Higher Education, Preservice and In-Service) Burst
How do you attract more preservice mathematics majors? What kind of mentor support will help mathematics majors while they are student teaching and during those first two years of teaching? How does an award of a National Science Foundation Robert Noyce Scholarship grant (DUE 1136426) help?

Janet Nichols
Colorado State University-Pueblo
110/112 (Convention Center)

## 455

## International Perspectives on

 Preparing Mathematics Teachers(Higher Education, Preservice and In-Service) Burst
Learn about teacher preparation practices across the Pacific Rim with a focus on Asian nations. Examine content knowledge preparation as well as pedagogical knowledge preparation, and discuss what knowledge is needed to enter the K-12 classroom well prepared to help all students meet high standards, including the Common Core State Standards.

Mark Ellis
Board of Directors, National Council of Teachers of Mathematics;
California State University, Fullerton
Chris Stapel
The Blake School, Minneapolis, Minnesota
Cynthia A. Miller
Arkansas State University, State University
704/706 (Convention Center)


## 11:30 A.M.-12:00 P.M.

## 456 <br> Denver Public Schools' Journey <br> Supporting Students with Math Learning Disabilities

(Preservice and In-Service) Burst
Denver Public Schools Department of Special Education dedicated resources to develop a stronger understanding of math learning disabilities and to support special educators in math education. I will present math learning disabilities, building a body of evidence and implementation of a few effective instructional strategies.

Robert Frantum-Allen
Denver Public Schools, Colorado

Four Seasons 4 (Convention Center)

## 457 <br> Self-Assessment as a Problem-Solving Tool with Preservice Teachers

(Preservice and In-Service) Burst
Many teacher trainees enter teacher education programs with tremendous fear of mathematics. This fear becomes more intense when they engage in mathematical reasoning and problem solving. I will share insights and examples of how preservice teachers have used self-assessment to develop their reasoning and problemsolving skills.
Deoanand Harbukhan
University of Trinidad and Tobago, San Fernando
104/106 (Convention Center)

11:30 A.M.-12:30 P.M.

### 457.1 CW

Pearson's Digits Program: Where Math Clicks
(General Interest) Exhibitor Workshop
Experience digits, the only middle grades math curriculum built for today's digital students with all Interactive Whiteboard lessons, online assessments, robust RtI, and automatic grading and reporting. Find out how digits harnesses the power of technology to optimize your time and individualize their learning - both in and out of the classroom.

## Pearson

Upper Saddle River, New Jersey
301 (Convention Center)
457.2 CW

## CCSS Math Practices? Trust CPM's 20 years of Writing Experience

## (6-12) Exhibitor Workshop

Try some lessons and take home samples of CPM's Core Connections series. The third generation of CPM blends Common Core State Standards content and practice standards in a coherent sequence from sixth grade through algebra 2 . Course elements include problem solving, mathematical thinking, problem-based lessons, and mathematical discourse in a student-centered format.

CPM Educational Program
Sacramento, California
302 (Convention Center)

## 457.3 ew

## Activities, Discovery, Task, Oh My! Seamless Integration into Your Content <br> (6-12) Exhibitor Workshop

See how easily the Standards for Mathematical Practice can be seamlessly integrated into your curriculum by using Activities, Discovery, and Tasks-all found on the HMD On Core Activity Generator.

## Houghton Mifflin Harcourt

Boston, Massachusetts
304 (Convention Center)

### 457.4 CW

Financial Algebra:

## An Advanced Algebra with Financial Applications Course

(9-12, Higher Education) Exhibitor Workshop

Looking for a math course accredited by the NCAA that is aligned with the Common Core State Standards? Advanced Algebra with Financial Apps and Cengage Learning's Financial Algebra text are the perfect fits for you. Learn about the financial algebra experience as you discover how to make advanced algebra accessible to all students.

Cengage Learning
Belmont, California
303 (Convention Center)

12:30 P.M.-1:30 P.M

## 458



## Enhancing Teaching and Learning with the Standards for Mathematical Practice

(General Interest) Session
Explore ways to help all students learn to reason mathematically across the grades. Experience firsthand what it looks and feels like when discourse and mathematical reasoning are the mainstay of mathematics classrooms.

Ruth Parker is a former grades 1-9 mathematics teacher. As CEO of the Mathematics Education Collaborative, Parker has worked with thousands of parents, teachers, administrators, mathematicians, engineers, and teacher educators throughout the nation. Her passion is to have all children, educators, and parents experience the compelling beauty and utility of mathematics, and to help all students succeed in challenging and engaging mathematics courses relevant to their needs in the twenty-first century.
Ruth Parker
Mathematics Education Collaborative, Ferndale, Washington
Four Seasons 2/3 (Convention Center)

## 459

## Fractions and Ratios across the Common Core State Standards

(General Interest) Session
What is a unit fraction, $1 / a$, and why is it important? How do multiplicative thinking and equivalence influence fraction operations? We'll discuss the Common Core State Standards for teaching fractions and ratios across the grades, with lesson examples consistent with the mathematical practices to develop deep understanding. We'll also discuss the effects on higher math.

Pamela Weber Harris
Pam Harris Consulting LLC, Kyle, Texas
Mile High 2 A (Convention Center)


## NCTM Business Meeting

(General Interest) Session
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

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\text { Mile High } 1 \text { C/D (Convention Center) }
$$

## 461 <br> Proof Enough for You? <br> (General Interest) Session

Students say, "We need more proof!" when they encounter activities that invite curiosity, speculation, and surprise. Examine ways to present tasks so that students feel the need to justify their observations and use proof to become more convinced about what they have found. See how a little proof can leave students asking for more.

Ralph Pantozzi
Kent Place School, Summit, New Jersey
605 (Convention Center)

## 462 <br> The Five "Secrets" to Effective Instruction

(General Interest) Session
With heart, humor, amusing anecdotes, and references to research, I will describe five simple yet powerful tips to improve teaching effectiveness. Though the talk is lighthearted, the substance is serious: helping students achieve far beyond their parents', teachers', or even their own expectations.

Frank Y. Wang
Oklahoma School of Science and Mathematics, Oklahoma City
Centennial Ballroom D (Hyatt Regency)

## 12:30 P.M.-1:30 P.M.

## 463 <br> Discovering Geometric Concepts through Children's Literature

(Pre-K-2) Session
Children's literature offers a new way to explore geometric concepts and vocabulary through stories and illustrations. Leave with a list of suggested book titles along with ready-to-use lessons.

Andrew D. Goodman<br>Clark County School District, Las Vegas, Nevada<br>Jennifer Crosthwaite<br>Clark County School District, Las Vegas, Nevada

Capitol Ballroom 4 (Hyatt Regency)

## 464 <br> Number Sense and the Common Core State Standards

(Pre-K-2) Session
What will the Common Core State Standards look like in your classroom? Engage in hands-on activities designed to develop an in-depth understanding of number sense in your students. Leave with instructional ideas that you can take back into your classroom.

Myrna I. Mitchell
Fresno Pacific University, California
Mile High 4 A/B (Convention Center)

## 465

## Early Algebra: Handle with CARE

(3-5) Session
CARE is Conceptual Algebra Readiness for Everyone, a partnership between the Michigan City Area Schools and Purdue University North Central to help children develop conceptual understandings of early algebra. We will share both problemsolving activities designed to help children generalize and videos of children learning to generalize.

## Marty Briggs

LaPorte Community Schools, Indiana
David Feikes
Purdue University North Central, Westville, Indiana
Janis Mitchell
Michigan City Area Schools, Indiana
405 (Convention Center)

## 466 Rit

## Response to Intervention: Identifying and Building on Students' Mathematical Understanding

## (3-5) Session

Explore how assessments of student understanding can inform the design of instruction in a response to intervention model. We share videotaped examples and student work for topics including counting principles, arithmetic operations, and fractions. We will discuss implementation in a classroom or special education context.

## Katherine E. Lewis

University of Washington, Seattle

## Marie B. Fisher

University of Washington, Seattle
Helen Thouless
University of Washington, Seattle
Centennial Ballroom B/C (Hyatt Regency)

## 467 <br> Fostering Reasoning and Proof through Problem Solving in Japan

(3-8) Session
Both the NCTM Process Standards and the Common Core State Standards for Mathematical Practice underscore the importance of reasoning and proof in the twenty-first century. Learn how Japanese teachers and their textbooks (grades 1-6) support developing these skills through their problem-solving approach to instruction.

## Makoto Yoshida

William Paterson University, Wayne, New Jersey
Mile High 4 E/F (Convention Center)

## 468

## Scan It, Solve It, Show It

## (3-8) Session

Are you "scanning" the world, looking for ways to engage your students? Power up student engagement by using QR codes to launch rich problems presented through animated videos. Learn how to create your own animated videos and QR codes to replicate this idea with your students. BYOT: iPad 2 or 3, iPhone, iTouch 4+, tablets.

## Joan Smith

Teaching and Learning Collaborative, Columbus, Ohio
Kelli Shrewsberry
Teaching and Learning Collaborative, Columbus, Ohio
203 (Convention Center)

## Teacher Created Materials

## Check out these key sessions

Featuring Teacher Created Materials' and Shell Education's popular authors and presenters


Motivating Students with Concept Development Games Thursday, April 18th 12:30pm - 1:30pm Hyatt Regency Capitol Ballroom 1-3


Just Right Problems


Math and Geography:


Karie Gladis Using Google Earth to Investigate Mathematics
Thursday, April 18th
3:30pm - 04:30pm
Hyatt Regency, Centennial Ballroom D

Act, Tell, Create, Draw, Move:
Learn Math
Friday, April 19th 2:00pm - 3:00pm Hyatt Regency, Centennial Ballroom F


Math Conferences:
Making Learning Visible
Saturday, April 20th 8:00am - 9:00am
Convention Center Room 405
Friday, April 19th
10:00am - 11:00am
Convention Center,
Room \#302


Visit us online for session descriptions at www.tcmpub.com/newsEvents

## 12:30 P.M.-1:30 P.M.

## 469 <br> The Walking Purchase and the Story of Measurement Terminology

## (3-8) Session

We will integrate social studies and mathematics. Learn about the Walking Purchase in the PA Colony as the social studies basis for teaching about land measurement and units of measurement. We will share activities to implement in the classroom.

## Judy A. Werner

Slippery Rock University, Pennsylvania

## Kim Creasy <br> Slippery Rock University, Pennsylvania <br> Capitol Ballroom 1-3 (Hyatt Regency)

## 470 <br> Your View, My View: Show and Win Me Over

(3-8) Session
A spreadsheet allows teachers to design tasks for students to manipulate pictorial and quantitative information and to make and test conjectures as they discover relationships between variables. This approach promotes mathematical argumentation. These different viewpoints are rich resources to develop students' mathematical competencies, such as justification.

Cynthia Seto
Academy of Singapore Teachers/Ministry of Education, Singapore, Singapore
Lisa Choy
Education Services Division/Ministry of Education, Singapore, Singapore

505 (Convention Center)

## 471 <br> No Child Left Unchallenged: Problem Solving with Core Content

## (6-8) Session

Learn six methods to create problem-solving opportunities with core math content. Emphasis is on accessible problem-solving experiences intimately connected with daily math content and designed to foster creativity, critical thinking, and perseverance. We'll work through and discuss plenty of examples in a middle grades context.

Darin Beigie
Harvard-Westlake School, Los Angeles, California
401/402 (Convention Center)
471.1

## A Smart Way to Thrive in Algebra (6-8) Session <br> Equity Strand Presentation

This session details strategies, including a professional development model, used in a district's summer and Saturday programs that promote access and equity for all students in algebra 1.
Engage in hands-on activities, including technology and games, that drive student motivation to learn.

Vanessa E. Cleaver<br>Littler Rock School District, Arkansas<br>Marcelline Carr<br>Littler Rock School District, Arkansas

207 (Convention Center)

## 472 <br> Do You See What I See? English Language Learners' Justifications

(6-8, Preservice and In-Service) Session
Equity Strand Presentation
Explore middle grades classroom episodes where English language learners present mathematical justifications based mostly on knowledge they perceive more from teachers' actions than from teachers' explanations.

## M. Alejandra Sorto

Texas State University, San Marcos
501/502 (Convention Center)

## 473

## Generalizing and Symbolizing: Essentials for Middle-Grades Algebra

 (6-8, Preservice and In-Service) SessionMaking the transition from working with numbers to symbols is a challenge for beginning algebra students and teachers. This session engages teachers in activities that use numbers, pictures, diagrams, and the Border problem to develop thinking in algebra. Explore generalizing and symbolizing as essential thinking for middle-grades algebra.
Barbara M. Kinach
Arizona State University, Tempe
Centennial Ballroom F (Hyatt Regency)

## 12:30 P.M.-1:30 P.M.

## 474 FA

## Becoming a Powerful User of Formative Assessment: Motivating Student Success

(6-12) Session
This motivational session will help you to design and implement in-class formative assessment processes that engage and differentiate instruction for all students in class. We will also discuss how to create and use assessment instruments (quizzes and tests) as part of a formative learning process for improving student effort and achievement.

Timothy D. Kanold<br>Loyola University, Chicago, Illinois

Four Seasons 1 (Convention Center)

## 475

## Formulating Statistical Questions

## (6-12) Session

The first step in statistical problem solving is to formulate a question that can be answered with data. We will investigate how to assist students in generating statistical questions, identifying the population, and describing the type of data that would need to be collected to answer the question.
Patrick W. Hopfensperger
University of Wisconsin-Milwaukee
601 (Convention Center)

## 476

## Help Students Understand Slope and Graphs with Free Smartgraphs Software <br> (6-12) Session

After traditional instruction, more than 40 percent of students still have trouble understanding average velocity and other sloperelated concepts. Learn to use free SmartGraphs software that helps students understand slope. There is nothing to download; activities run directly in a Web browser. You can even create and share your own activities.

## Andrew A. Zucker

The Concord Consortium, Concord, Massachusetts

## Carolyn Staudt

The Concord Consortium, Concord, Massachusetts
Mile High 2 C (Convention Center)

## 477 <br> How Chinese Improved Test Scores in Only Four Years' Time

(6-12) Session
This study provides empirical evidence of the approaches and strategies that Chinese teachers used to successfully reform their mathematics teaching in only four years. Our study has implications for successful implementation of the Common Core State Standards in U.S. mathematics classrooms through targeted U.S. teacher professional development.

## Lianfang Lu

University of Arkansas, Little Rock
Thomas E. Ricks
Louisiana State University, Baton Rouge
102 (Convention Center)

## 478 <br> Strategies for Fostering Academic Literacy in Mathematics

(6-12) Session

Learn key strategies to improve vocabulary and reading comprehension of text/questions. Discuss dynamic ways to improve middle/high school students' academic literacy in mathematics. I will highlight resources for teaching academic/adolescent literacy from the International Reading Association.

## Carol Hryniuk-Adamov

University of Manitoba, Winnipeg, Canada
107/109 (Convention Center)

## 480 <br> Transformational Geometry and the Core Math Tools

## (6-12) Session

The Common Core State Standards call for an emphasis on transformational geometry, which is unfamiliar to many students and teachers alike. See how you can use the Core Math Tools, a suite of software tools available free from the NCTM website, to introduce transformations and extend their use to more advanced geometric concepts.

## W. Gary Martin <br> Auburn University, Alabama

705/707 (Convention Center)

## 12:30 P.M.-1:30 P.M.

## 481 <br> Using Technology Simulations to Reason about Probability and Statistics <br> (6-12) Session

We will explore two tasks, using a variety of technology tools to conduct simulations modeling actual data and to compare likelihoods of different events. We will discuss building models, conducting repeated samples, and dynamic graphs as ways to promote reasoning among students. You will share data via text message and website polls.

Hollylynne Lee<br>North Carolina State University, Raleigh<br>Blake Whitley<br>North Carolina State University, Raleigh

108 (Convention Center)

## 482 <br> When Reasoning Matters: Using Mathematical Thinking to Make Financial Decisions

(6-12) Session
We will use financial choices to explore the various ways that individuals use problem-solving skills to make real-world decisions. We will then examine the value of mathematical thinking and reasoning in convincing others that our decision was "good." I will share free resources to incorporate real-world contexts in math lessons.

Valerie Klein
The Math Forum @ Drexel University, Philadelphia, Pennsylvania Mineral Hall F/G (Hyatt Regency)

## 483

## Take Time to Question the Questions

(9-12) Session
With the help of technology, math teachers have a rich array of engaging exploration environments to lay before students. It takes thoughtful reflection, though, to construct meaningful and appropriate questions. We will see activities from algebra, geometry, and calculus and explore what makes a question good.

## Mark Howell

Gonzaga College High School, Washington, D.C.
709/711 (Convention Center)

484
lim_\{calculus $\rightarrow$ RME\} f(calculus) $=$ :-D
(Higher Education) Session
Using Realistic Mathematics Education (RME), we explore student understanding of limits by using progressive formalization and context. After an overview of a proposed instructional sequence for limits, you will have an opportunity to design and discuss activities and tasks to develop student understanding of limits. Zeno, eat your heart out.

Ryan T. Grover
University of Colorado at Boulder
702 (Convention Center)

## 485 <br> Shhh—We Sneaked in a Second Methods Experience via Authentic Teaching

(Higher Education, Preservice and In-Service) Session
We recently integrated an authentic teaching experience into our methods course. As a result of the great impact, we added a second course where teacher candidates work with university faculty in teaching a class. We will share the structure of the experience, lessons learned, and feedback, as well as the impact on preservice teachers' teaching.

## Paula R. Stickles

Millikin University, Decatur, Illinois
205 (Convention Center)

## 486

## Coaching the Mathematical Practices

(Preservice and In-Service) Session
Math coaches have provided professional development designed to promote student learning and achievement by focusing on content knowledge and pedagogy. With the adoption of the Common Core State Standards, the coaching needs have shifted. By attending to the Mathematical Practices and five recommended domains, coaches can once again lead the way.

Pia M. Hansen
Math Learning Center, Salem, Oregon
Mile High 3 B (Convention Center)

1:00 P.M.-2:00 P.M.

### 486.1 CW

## Alice Foster Presents Catchup Math: Differentiated, Customizable Online Instruction (Secondary)

(General Interest) Exhibitor Workshop
Flexible, easy-to-use online resources provide diagnostic/prescriptive math review and practice for at-risk and struggling students. Customize for individual students, for entire classes, as assignments for current classwork, for resource labs, or to challenge above-level students. View the variety of teacher management and reporting options.

## Catchup Math by Hotmath

Kensington, California
302 (Convention Center)

### 486.2 CW

## Investigations: <br> Attaining the Required Common Core State Standards Fluencies

## (General Interest) Exhibitor Workshop

There are eight "required" fluencies noted in the Common Core State Standards for grades K-5. One of the foundational goals of the Investigations curriculum has always been to "focus on computational fluency with whole numbers as a major goal of the elementary grades."

## Pearson

Upper Saddle River, New Jersey
301 (Convention Center)

### 486.3 CW

## Effective Teaching Strategies for Your Common Core Curriculum in Action

(Pre-K-5) Exhibitor Workshop
Juli Dixon's professional interests relate to developing and deepening teachers' mathematics content knowledge for teaching and communicating and justifying mathematical ideas. Using her new professional development videos, Juli will show how easily the Standards for Mathematical Practice can be integrated into your Common Core curriculum.

## Houghton Mifflin Harcourt

Boston, Massachusetts
486.4 CW

What's New at HP:
Unveiling Graphing Excellence
(9-12, Higher Education) Exhibitor Workshop
Attend the unveiling of HP's breakthrough calculator and discover new, exciting ways to approach mathematics learning. Receive free handouts, including a virtual calculator for PCs; one lucky winner will receive an exclusive class kit of HP's new calculator with 8 hours of virtual professional development training.
Hewlett-Packard Calculators
Fort Collins, Colorado
303 (Convention Center)

## 487 NT <br> Common Core State Standards Mathematical Practices in the Early Grades

(Pre-K-2) Gallery Workshop

Engage in activities that support use of the Common Core State Standards mathematical practices. Hands-on activities will give you experiences in reasoning and proof embedded within the mathematical practices and applied across a variety of concepts and topics.

## Joseph Zilliox

University of Hawaii, Honolulu
Eomailani Kukahiko
University of Hawaii, Honolulu
708/710/712 (Convention Center)

## 488 <br> Ge-O-Me-Try: Developing a Foundation in Geometry

(Pre-K-2) Gallery Workshop

Get lessons to enhance student understanding of geometry and spatial awareness for pre-K-grade 2 students. The lessons rely heavily on manipulative materials, which will be available for you to explore. With these experiences, children will build a strong foundation for the future study of formal geometry.

## Kim Bowen

Mathematical Perspectives Teacher Development Center, Bellingham, Washington

> Centennial Ballroom A (Hyatt Regency)

## 489

## Harnessing the Power of Place Value in the Common Core State Standards

(Pre-K-2) Gallery Workshop
In constructing ones to hundreds, this gallery workshop will investigate the role of place value in whole-number operations, relative size, and mental math. I will share activities and tools for composing, decomposing, comparing, and mentally adding and subtracting powers of tens to foster understanding and nurture reasoning with place-value structure.

## Marti Kuntz

Educational Resources Group, Charleston, South Carolina
Mile High 1 A/B (Convention Center)

## 490 <br> Let's Get Physical with Math on the Floor

## (Pre-K-2) Gallery Workshop

This active presentation will introduce $\mathrm{K}-2$ teachers to many creative ways of teaching through physical exploration, on a large, 100 -square floor grid. We will address number sense, patterns, basic geometry, nonstandard measurement, and data management, with many ideas for immediate classroom implementation. Bring a camera to capture math through play.

Wendy Ellen Hill
The Learning Carpet-TLC, Huntsville, Canada
607 (Convention Center)

## 491 <br> Let's Play Cards: A Simple, Fun Approach to Teaching Math <br> (Pre-K-2) Gallery Workshop

Transform your math teaching with games and activities by using a standard deck of cards. Explore how to use cards to develop basic number sense, problem-solving skills, logical reasoning, and much more. You will leave this gallery workshop with materials ready to use when you return to the classroom.

Frances O. Coleman
Collegiate School, Richmond, Virginia
Nicola Byford
Collegiate School, Richmond, Virginia
Mile High 4 C/D (Convention Center)

## 492 <br> Reading and Writing: In Math Class? <br> (Pre-K-2) Gallery Workshop

Use children's literature books and math journals to engage children in problem-solving activities that encourage development of the Standards for Mathematical Practice. Leave with activities you can use in the classroom on Monday. Student work samples and video clips will give a glimpse into how this looks in the classroom.

Lori Price
St. Johns County School District, St. Augustine, Florida
704/706 (Convention Center)

## 493 <br> Let's Get Learning: Engaging Adults with the Big Ideas

(Pre-K-2, Preservice and In-Service) Gallery Workshop
Engage in hands-on, minds-on learning activities in foundational math. Consider how to use adult learning activities to build knowledge of mathematical development and pedagogy, as well as content. Share with each other and consider how to apply the ideas and approaches presented to your own work setting.

## Lisa M. Ginet

Erikson Institute Early Mathematics Education Project, Chicago, Illinois

Donna Johnson
Erikson Institute Early Mathematics Education Project, Chicago, Illinois

506/507 (Convention Center)

## 494 <br> Cracking the Shell of the Core with Box Turtles

## (3-5) Gallery Workshop

Bring excitement into your classroom with this engaging turtle project that addresses the depth of understanding that the Common Core State Standards demands. Enjoy hands-on activities, art, and standards-based tasks that teach Core Standards and address the Mathematical Practices. Area, perimeter, polygons, angles, liters, and problem solving will be the focus.

## Marrie S. Lasater

Middle Tennessee State University and MC² Math Consultants, Murfreesboro

201 (Convention Center)

The NCTM Membership Showcase has activities, lessons, sample journals, and more - stop by!

495
Creating Mathematical Tasks to Support Children's Early Algebraic Thinking
(3-5) Gallery Workshop
Not all curricula are created equal. Thus, knowing how to create tasks that build the algebraic habits of mind students need is a crucial step toward developing children's algebraic thinking. Learn how to transform curriculum-style problems into powerful early algebraic tasks that harness the Common Core State Standards's Mathematical Practices.

Timothy Marum
TERC, Cambridge, Massachusetts
Maria Blanton
TERC, Cambridge, Massachusetts
111/113 (Convention Center)

## 496 NT <br> Motivating Community-Building Activities: Avenues to Strengthen Mathematical Practices

(3-5) Gallery Workshop
Do you question the depth of mathematical practices your students gain through inquiry-based lessons? Strengthen your mathematics lessons with community-building strategies that enhance the level of student engagement. See how embedded assessment captures the mathematical practices and informs how to adapt instruction to meet a range of learners.

## Kimberly Englert

Jefferson County Public Schools, Louisville, Kentucky
Elizabeth Todd Brown
University of Louisville, Kentucky
Mile High 1 E/F (Convention Center)

## 497 <br> Using Coffee Stirrers to Develop and Test Geometric Concepts

(3-5) Gallery Workshop
Experience hands-on activities using coffee stirrers and chenille sticks to develop, make, and test conjectures about geometric concepts such as attributes of 2-D and 3-D shapes. You will receive a list of literature selections, apps, and resources that enhance the development of the concepts presented.

## Carolyn L. White

Rice University School Mathematics Project, Houston, Texas
Susan Troutman
Rice University School Mathematics Project, Houston, Texas
406/407 (Convention Center)

## 498 <br> Integers and Equivalent Fractions with Representation Foldables

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

Organize information. Create two foldables, one for integers and one for equivalent fractions. Capture various ways to represent integers and fractions for teaching purposes. Both start with concrete examples and move to procedure, including operations. From here, you can create appropriate foldables for your students.

## Heidi Hunt-Ruiz

Northwest Vista College, San Antonio, Texas
Mary Q. Zocchi
Northwest Vista College, San Antonio, Texas
503/504 (Convention Center)

## 499 <br> The Good, the Bad, and the Ugly: Fractions

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

Fractions don't have to be ugly. Discover how good use of the SMART Board, TI-34 Multiview, and manipulatives combine to build conceptual understanding and make fractions meaningful and fun. Hands-on activities will integrate unique features of the technologies, appropriate for all learners. Leave with ready-to-use lessons, guided by the Common Core State Standards.

Christine Ruda
Teachers Teaching with Technology ( $\mathrm{T} \wedge 3$ ), Miami, Florida Four Seasons 4 (Convention Center)

## 500

## Packing a Powerful Punch with Patterns: Foundations of Algebraic Thinking <br> (3-8) Gallery Workshop

We will focus on patterns, relations, and algebraic thinking, important elements of the NCTM Algebra Content Standard. This hands-on approach will help build the concept of equality and develop the thinking/reasoning processes students need to succeed in algebra.

## Carollee Norris

BC School District \#60 Peace River North, Fort St. John, Canada Centennial Ballroom E (Hyatt Regency)

501

## Explore "Doing Mathematics" and the Standards for Mathematical Practice <br> (6-8) Gallery Workshop

Engage in group-worthy, high-cognitive-demand tasks that will help you to teach using the Common Core State Standards for Mathematical Practice. You will take away model activities from each of the four Common Core State Standards to use in your classroom. By experiencing the activities as students, you may better lead your own students through similar challenges.

Linda M. Giauque
Weld Re-4 SD, Windsor, Colorado
403/404 (Convention Center)

502<br>Help Students Dig into Data, Statistics, and Probability with TinkerPlots<br>(6-8) Gallery Workshop<br>We'll explore the Common Core State Standards Statistics and Probability Standards for grades $6-8$ by using TinkerPlots. We'll generate data through hands-on activities and then use TinkerPlots to morph and manipulate graphs to create colorful representations of real-world data. Bring your own laptop to play along.

Elizabeth DeCarli
Key Curriculum, Emeryville, California
Karen M. Greenhaus
Key Curriculum, Emeryville, California
Mile High 2 B (Convention Center)

## 503

## Uncovering Proportional Relationships in an Ancient Puzzle

(6-8) Gallery Workshop
A key component of the algebra readiness of a middle school student is the ability to think and reason proportionally. Construct a tangram to explore the puzzle's proportional relationships. Assemble three-dimensional nets to create a new version of the puzzle and new questions.

## Diane Therese Devine

Cambridge Public Schools, Massachusetts
Capitol Ballroom 5-7 (Hyatt Regency)

## 504

## Perplexing Platonics: What Relationships Can We Find and Prove?

## (6-12) Gallery Workshop

Come construct regular polyhedra, also known as the platonic solids. Use the models to discover two special relationships found in the regular polyhedra. Employ mathematical reasoning to develop a proof of the relationships. Classroom-ready materials will be available.

Teri L. Willard<br>Central Washington University, Ellensburg

Mandy L. McDaniel
Boise State University, Idaho
Mile High 3 A (Convention Center)

## 505

## Algebra 1 and 2 Activities from Automotive, Manufacturing, and Construction

(9-12) Gallery Workshop
You will participate and receive engaging hands-on, classroomready activities that highlight higher-level thinking. The activities will span many career paths. The math topics include linear equations, systems of equations, quadratics, and exponentials. See how project-based activities can increase learning and provide relevance.

## Tom W. Moore

Thompson R2J Schools, Loveland, Colorado
110/112 (Convention Center)

## 506 <br> Building on Strengths and Interests: Motivating Latino Students

(9-12) Gallery Workshop
Participate in a wide variety of successful activities used in an urban high school to motivate and engage Latino students. From Pi Day to ethnomathematics to individualized projects, these activities, within the context of the geometry curriculum, both motivate and foster students' mathematical proficiency and cognitive development.

## Donna Mark

Vineland High School, New Jersey
Mile High 3 C (Convention Center)

507

# Parabolas, Ellipses, and Hyperbolas: From Paper Folding to the iPad 

(9-12) Gallery Workshop

Develop a deeper understanding of the definition of parabolas, ellipses, and hyperbolas by paper folding; discover that what looks like each conic section is really the "envelope" of tangent lines; find where the loci of points actually is; mimic the same actions by using the iPad; and compare the ellipse with the hyperbola.

## Arthur T. Mabbott

Bear Creek Learning Center, Woodinville, Washington
Mineral Hall D/E (Hyatt Regency)

## 508 <br> Statistical Inference through Simulation

(9-12) Gallery Workshop
Through hands-on techniques and technology to conduct simulations, we will explore concepts of statistical inference. These simulations (randomization tests) offer more flexibility in the hypotheses our students can test and allow them to focus on conceptual understanding and statistical thinking.

## Paul L. Myers

Georgia Institute of Technology, Atlanta
603 (Convention Center)

## 509

## The Mathematics of Forensic Science

(9-12) Gallery Workshop
Sample activities in forensic science that use mathematics. Activities will include snippets from crime scene mapping, blood pattern analysis, anthropology, odontology, taphonomy, and crash scene investigations. The mathematics used will range from prealgebra to calculus 2 concepts. Please bring a calculator.

## Martha Peters

Tulsa Public Schools, Oklahoma
Centennial Ballroom G/H (Hyatt Regency)

## 510

## Use Manipulatives to Differentiate Instruction

(9-12) Gallery Workshop
Help students gain mathematical proficiency through the use of manipulatives to differentiate instruction. Cognitively demanding tasks from algebra 1 and 2 will use manipulatives to help students visualize concepts such as factoring polynomials, completing the square, growth patterns, and linear functions using recursive and explicit formulas.

## Marian E. Avery

Great Valley High School, Malvern, Pennsylvania
Mineral Hall A-C (Hyatt Regency)

## 511

## Reasoning and Sense Making with CAS: Generalizing Patterns in Algebra

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

According to the Common Core State Standards, students are to learn how to use appropriate tools, such as a computer algebra system (CAS), strategically. Investigate how you can use a CAS to help students make sense of and generalize patterns in algebra, as per the Common Core State Standards high school content standard for algebra.
Donald T. Porzio
Illinois Mathematics and Science Academy, Aurora
104/106 (Convention Center)

## 512 RP

Research in Proof:
Continuing the Conversation
(Preservice and In-Service) Gallery Workshop
Despina Stylianou, recipient of the Linking Research and Practice Outstanding Publication Award, along with the speakers from the Research in Proof strand, will meet with attendees in smaller, interactive groups to facilitate conversation about the sessions and future work.

Despina Stylianou
City College of New York, New York
103/105 (Convention Center)

2:00 P.M.-3:00 P.M.
513


Best of "Problem to Ponder" and Other President's Messages
(General Interest) Session
During my presidency, my monthly column "Problem to Ponder" generated quite a bit of response from the NCTM membership. Revisit readers' favorite problems from the column, as well as share reflections on several of my more controversial President's Messages that generated considerable reader reaction during my term.

## J. Michael Shaughnessy

Past President, National Council of Teachers of Mathematics; Portland State University, Oregon

Four Seasons 2/3 (Convention Center)

## 514 Bit

Dancing the Dance: Special Educators
as Dance Partners in Mathematics
(General Interest) Session
Reflect on the various pitfalls, struggles, and successes for effectively teaching with special educators' inclusive classrooms. I will share a plethora of practical resources. See examples from teachers whose classrooms made yearly progress for students with disabilities.

Lisa Ann Dieker
University of Central Florida, Orlando
Centennial Ballroom D (Hyatt Regency)

## 515

## Formative Assessment and the Common Core State Standards: Classroom and Systems Strategies

(General Interest) Session
President Series Presentation
Data gleaned from the use of formative assessment strategies has potential to lift student achievement in classrooms and across grades in school systems. Explore a constellation of formative assessment strategies that can strengthen daily instruction and district programs in advance of the 2014-2015 assessments.

## Valerie Lynn Mills

National Council of Supervisors of Mathematics; Oakland Schools, Waterford, Michigan

Mile High 3 B (Convention Center)

## 2:00 P.M.-3:00 P.M.

## 516 <br> Implementing the Common Core State Standards: Five Paradigm Shifts

## (General Interest) Session

History indicates that content standards alone will neither have the desired impact on student achievement nor close existing achievement gaps. Examine five necessary paradigm shifts for the implementation of the Common Core State Standards for Mathematics to succeed, improve student achievement, and close achievement gaps.

## Matthew R. Larson

Board of Directors, National Council of Teachers of Mathematics; Lincoln Public Schools, Nebraska

$$
\text { Mile High } 1 \text { C/D (Convention Center) }
$$

## 517 <br> Mathematical Solutions to Rising Global Health Issues: Authentic Problem-Based Learning

(General Interest) Session

Embrace the Common Core State Standards and empower learners to use 21 st-century skills to solve 21 st-century problems via authentic, interdisciplinary, problem-based learning. Engage and excite learners in using mathematics to address a rising global health issue. We will share tools to foster student discourse and critical thinking.
Karen L. Lindebrekke
iBIO Institute EDUCATE Center, Chicago, Illinois
Ann Reed
iBIO Institute EDUCATE Center, Chicago, Illinois
703 (Convention Center)

## 518 <br> Model for a Self-Paced, Flipped Mathematics Classroom

(General Interest) Session
Explore the theory, rationale, and fleshing out of a flipped mathematics classroom. I will explain an actual working model, from the theoretical foundation to the end product. This presentation will detail classroom procedures, outside of class procedures and grading procedures.

## Steven Alan Harris

Cardigan Mountain School, Canaan, New Hampshire 102 (Convention Center)

## 519

## Sustaining Equity in Mathematics Performance through Culturally Relational Practices <br> (General Interest) Session

How might school and university research partnerships in Native American communities address inequities in mathematics performance? We will share how conversations around mathematics assessment gave opportunities for community members to build generative relationships with mathematics through culturally relational practices.
Florence Glanfield
University of Alberta, Edmonton, Canada
Gladys Sterenberg
University of Alberta, Edmonton, Canada
Dwayne Donald
University of Alberta, Edmonton, Canada
505 (Convention Center)

## 520 <br> Using Video Mosaic Collaborative Repository to Promote Student Reasoning

(General Interest) Research Session
Explore the open-source, online resources of Video Mosaic Collaborative (VMC) to support teaching practices that promote development of student reasoning in mathematics. The VMC videos and related resources come from long-term research and span elementary to secondary levels in several mathematics content areas.

## Carolyn A. Maher

Rutgers University, New Brunswick, New Jersey
Marjory F. Palius
Rutgers University, New Brunswick, New Jersey
601 (Convention Center)

# ideas \& <br> ins <br> - 



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## 2:00 P.M.-3:00 P.M

## 521

## Counting and Cardinality: More than Just 1, 2, 3

(Pre-K-2) Session
Decades of research findings offer a clear and concise structure of what children must understand to be proficient in counting. Learn about research on counting and cardinality, examine where the Common Core State Standards address those ideas directly, and discuss video clips of grades $\mathrm{K}-1$ students learning to count.

## Zachary Champagne

Florida Center for Research in Science, Technology, Engineering, and Mathematics, Florida State University, Tallahassee

Linda L. Walker
Florida Center for Research in Science, Technology, Engineering, and Mathematics, Florida State University, Tallahassee Mineral Hall F/G (Hyatt Regency)

## 522 <br> Culturally Responsive Parent-Teacher Collaboration to Support Early Mathematics Learning

(Pre-K-2) Session
Learn about a research-based framework to develop reciprocal relationships between teachers and families to connect home and school mathematics. We offer examples of practices that contribute to a rich understanding of what, how, and where children learn mathematics and how to incorporate that knowledge into practice.

## Anita Wager

University of Wisconsin-Madison
605 (Convention Center)

## 523

## Write Mathematics into the Story

(Pre-K-5) Session
Come discover how to integrate mathematics into your students' favorite stories. See examples of how literature affords contexts that foster mathematical thinking and reasoning. We will share examples of lessons and students' responses. Bring your favorite book to start writing your own mathematics lesson situated in a lively context.

Nicole M. Wessman-Enzinger
Illinois State University, Normal
Megan H. Wickstrom
Illinois State University, Normal

# 524 <br> Act, Tell, Create, Draw, Move: Learn Math 

## (3-5) Session

Art integration is more likely to happen in subjects other than math. Let's change that. Investigate how to help your students meet the Common Core State Standards for Mathematics while telling stories, acting, writing poems, moving, singing, and creating visual art. Leave with ideas you can implement immediately in your math classroom.

## Linda Dacey

Lesley University, Cambridge, Massachusetts
Centennial Ballroom F (Hyatt Regency)

## 525 <br> Turn Toward Success: <br> How High-Quality Interactions Raise Student Achievement <br> (3-5) Session

The students at my elementary school were in crisis. Faced with a high rate of underperforming students, the school worked with the Blueprint School Network to turn students into confident mathematicians. I will discuss the instructional strategies and structured interactions that had a major impact on student achievement in my district.

## Kimberly Broker

McGlone Elementary Denver Public Schools, Denver, Colorado
501/502 (Convention Center)

## 526 FA

Supporting Student Self-Assessment and Responsibility through Formative Assessment
(3-5, Preservice and In-Service) Session
Learn strategies to help students take greater responsibility for their own learning by activating prior knowledge, providing actional feedback, and promoting rubrics for students to self-assess and monitor their work.

## Mari Muri

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

## Jeane Joyner

Meredith College, Raleigh, North Carolina
107/109 (Convention Center)

## 2:00 P.M.-3:00 P.M.

## 527 <br> iPad Apps That Work in Our Mathematics Classrooms

## (3-8) Session

Many educational apps exist for the iPad, but finding apps that go beyond drill and practice is difficult. We will share apps that offer opportunities for students to explore, reason, discuss, and understand mathematical concepts and that support consolidation and practice. We will also share strategies for classroom use of iPads.

## Timothy W. Pelton

University of Victoria, Canada
Leslee Francis Pelton
University of Victoria, Canada
Mile High 2 C (Convention Center)

## 528

## iSolve with iPad

(3-8) Session
This session offers ideas for teachers and students at the middle school level to use the iPad, with a focus on algebraic reasoning. We will discuss and share apps used to help students learn math and for teachers to use in teaching.

## Donna Gee

Angelo State University, San Angelo, Texas
Trey Smith
Angelo State University, San Angelo, Texas
Mile High 2 A (Convention Center)

## 529 <br> English Language Learners' Use of Gestures in Arguments

(6-8) Session<br>Equity Strand Presentation

See how English language learners (ELLs) make a convincing argument by incorporating gestures along with speech. We will also analyze gestures through video clips that involve ELLs' communicating their thinking.

## Marta Civil

University of North Carolina at Chapel Hill
405 (Convention Center)

## 530

## Music and Math: Singing for Success

## (6-8) Session

Find out how to use music in your classroom to help students understand mathematics. "Mathematics does to the mind what music does to the soul and poetry to the heart."

## Cynthia R. Parker

Alice Drive Middle School, Sumter School District, South Carolina
205 (Convention Center)

## 531 <br> Our iPad Story: Helping Our Students Develop Their Practice

(6-8) Session

Sustainable student learning happens when students' abilities are validated, explored, and challenged in an environment that fosters student discourse. We'll share how we've been using iPad video features in middle school math classrooms to develop students' accountable talk and deepen students' mathematical practices.

## Erin Igo

Colonial School District, New Castle, Delaware
Beth Nickle
Colonial School District, New Castle, Delaware
Capitol Ballroom 4 (Hyatt Regency)

## 532 <br> Pairing Mathematics and Figure Skating

(6-8) Session
Figure skating is the winter Olympic sport that the most viewers watch. We will explore proportional relationships describing aspects of pairs figure skating. Topics include the international judging system, conservation of momentum, and skating paths on the ice. We aim to raise mathematical literacy by giving students motivating contexts.

Diana S. Cheng
Towson University, Maryland
Tetyana Berezovski
St. Joseph's University, Philadelphia, Pennsylvania
108 (Convention Center)

## 533 <br> Tools and Activities to Support Statistical Reasoning and Sense Making

(6-8) Session
Learn how to use NCTM's free online statistics tools to simulate probability experiments, collect and display data, and analyze the results. Engage in activities that address the Common Core State Standards for Mathematics, encouraging students to make sense of statistical concepts, describe and compare data sets, discuss probabilities, and draw reasonable conclusions from data.

## Mary Majerus

Westminster College, Fulton, Missouri
Debbie Perkowski
Consultant, Fulton, Missouri
Michael Perkowski
University of Missouri, Columbia

## 702 (Convention Center)

## 534



## Creating Opportunities for Students to Engage in Reasoning and Proof

(6-12) Session
Although there is a growing consensus that the grades 7-12 curriculum needs greater emphasis on reasoning and proof, research shows that most textbooks offer limited opportunities to engage in these practices. We will focus on how to modify tasks to give students more opportunities to engage in reasoning and proving.
Margaret Smith is a professor in the Department of Instruction and Learning in the School of Education and a senior scientist at the Learning Research and Development Center, both at the University of Pittsburgh. She is currently a co-principal investigator of the NSF-funded CORP (Cases of Reasoning and Proving in Secondary Mathematics) Project, which is creating materials to develop teachers' knowledge related to reasoning and proof and their ability to support students' engagement in these mathematical practices.

## Margaret (Peg) Smith

University of Pittsburgh, Pennsylvania
Four Seasons 1 (Convention Center)

## 535

## Students' Conceptions of Mathematics as Sensible and Related Instructional Practices

(6-12) Research Session
The Common Core State Standards require that students see mathematics as sensible and connected, but research indicates that most students view mathematics as a disconnected set of procedures and facts. Learn about (1) indicators that students see mathematics as sensible and (2) the instructional practices associated with such a view of mathematics.
Maureen M. Grady
Pennsylvania State University, University Park
705/707 (Convention Center)

## 536

## Mathematics Teaching in the

 Caribbean: Lessons to Be Learned
## (9-12) Session

## Equity Strand Presentation

Daryl Rock, a longtime mathematics educator of urban students, compared how mathematics is taught in the Caribbean with how it is taught to African Americans in the United States. We will present the findings, with a focus on what mathematics teachers of African American students can learn from the Caribbean approach.

## Daryl Rock

Rock Academic Services, Brooklyn, New York

## Imani Fischer

Benjamin Banneker High School, Brooklyn, New York

## 2:00 P.M.-3:00 P.M

## 537 <br> Student Response Systems and Getting Students Talking <br> (9-12) Session

Clicker question use in classrooms has grown rapidly, but how does a teacher effectively integrate them into instruction? Although clicker questions provide feedback, they are significantly more useful in engaging students in discussion. We will examine what makes a good clicker question and present strategies for using them in the classroom.

## Brandon Milonovich

Syracuse University, New York

## Helen M. Doerr

Syracuse University, New York

## Collin Bruce

Syracuse University, New York
Mile High 4 E/F (Convention Center)

## 538 <br> Modeling Data with Core Math Tools: Enhancing Mathematical Practice Implementation

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

Explore using Core Math Tools, a suite of free Java-based mathematical software tools, to model algebraic data. We will use the Computer Algebra System and Spreadsheet features to enhance implementation of Common Core State Standards content and mathematical practice standards.

## Erin Elizabeth Krupa

Montclair State University, New Jersey
401/402 (Convention Center)

2014 Annual Meeting and Exposition proposal deadline is May 1, 2013. Go to www.nctm.org/speak to submit your proposal! Assessment Presentation

539
Transformational Geometry: Linking Geometry and Algebra with the Common Core State Standards
(9-12, Preservice and In-Service) Session
Explore how to get students to think geometrically and algebraically about transformational geometry, its properties, and its algebraic representation. The Common Core State Standards and international curricula offer rich tasks that include technology; cultural perspectives; and connections to mathematics, art, and science.
Vivian La Ferla
Rhode Island College, Providence
207 (Convention Center)

## 540 <br> Two of the Calculator's Lesser-Known Modes: Sequence and Parametric <br> (9-12, Preservice and In-Service) Session <br> Ever wonder how a daily dose or megadose of medicine affects you? We will explore medical and environmental applications of convergence. We will also explore parametric representations including motion in applications, baseball, the classic train problem, Lissajou figures, complex powers and roots, inverse of functions, rose curves, and conics. <br> David Kapolka <br> Emeritus, Forest Hills Public Schools, Grand Rapids, Michigan <br> Centennial Ballroom B/C (Hyatt Regency)

## 541 <br> Energizing Geometry, Reasoning, Proof, and Mathematical Practices through Technology

(Preservice and In-Service) Session
Dynamic geometry environments (DGEs) help students explore mathematics while generalizing, reasoning, and proving. Get examples that address Common Core State Standards for Mathematics for geometry and mathematical practices through constructing viable arguments. Specific examples will use both a computer DGE and an iPad applet.

Gina M. Foletta
Northern Kentucky University, Highland Heights
Mile High 4 A/B (Convention Center)

## 2:00 P.M.-3:00 P.M.

## 542 <br> Mathematical Modeling: The Core of the Common Core State Standards

(Preservice and In-Service) Session
As a Common Core Content Standard and a Standard for Mathematical Practice, mathematical modeling affords a rich opportunity around which to develop and unify the mathematical content of the high school conceptual categories and the mathematical practices. We will examine several illustrative modeling tasks by using NCTM's free software, Core Math Tools.

## Christian R. Hirsch

Western Michigan University, Kalamazoo
203 (Convention Center)

## 2:30 P.M.-3:30 P.M.

## 542.1 eW

## Introduction to JUMP Math

## (General Interest) Exhibitor Workshop

Learn how JUMP's approach is empowering students by helping grades 1-8 teachers continually assess, carefully scaffold, and guide discovery through differentiated instruction that allows whole classes to progress at roughly the same pace. Also, learn about JUMP's U.S. editions, fully aligned with the Common Core State Standards.

## JUMP Math

Toronto, Alberta
303 (Convention Center)

## 542.2 ew <br> How Math Navigator Common Core Addresses Students Struggling with Math

## (General Interest) Exhibitor Workshop

Why do some grades $1-8$ students struggle with basic math concepts? Math Navigator Common Core targets misconceptions that prevent students from mastering the foundational concepts, which in turn result in poor performance. Learn how Math Navigator pinpoints these pitfalls, corrects them, and helps build a solid math foundation.

## Pearson

Upper Saddle River, New Jersey
301 (Convention Center)
542.3 ew

Lessons from Singapore:
Developing Number Sense/Problem Solving with Visual Models
(Pre-K-5) Exhibitor Workshop
See the American version of Singapore's highly successful curriculum and its use in the U.S. It will focus on how Singapore's visual models and effective pedagogy enable all students to develop number sense and solve complex problems so they are ready for the Common Core State Standards-based assessments.

## Houghton Mifflin Harcourt

Boston, Massachusetts
304 (Convention Center)


#### Abstract

542.4 CW

Let Geometry "Envelope" Your Students via Foldable Projects

\section*{(3-8) Exhibitor Workshop}

In this fast-paced, make-and-take session, you will cut, fold, and more as you transform manila envelopes into geometry projects sure to engage even the most reluctant learner. Concepts addressed include perimeter/area, parallel/perpendicular lines, angles, and quadrilaterals. Leave with your own finished model ready to use on Monday. Dinah-Might Adventures, LP San Antonio, Texas


302 (Convention Center)

2:45 P.M.-4:00 P.M.

## 543

Place-Value Fluency: Examples of Child-Centered Practice and Assessment
(Pre-K-2) Gallery Workshop
The Common Core State Standards require children to develop flexible base-ten understanding of numbers at a much earlier age. How can you foster these understandings in pre-K-grade 2 classrooms without mindless drill? How can you assess how firm, broad, and deep your students' understanding is without worksheets? Come and find out.

## Greg Nelson

Bridgewater State University, Massachusetts
403/404 (Convention Center)

## 2:45 P.M.-4:00 P.M.

## 544 <br> Building the Foundation: Developing Math Concepts in Preschool

(Pre-K-2, Preservice and In-Service) Gallery Workshop

The ECE Department in Aurora Public Schools is using state and early learning standards to plan for children's in-depth involvement with mathematical ideas to build a foundation for early math concepts. Resources used: Developing Number Concepts in Pre-K by K. Richardson and Teaching Strategies GOLD Objectives for Development and Learning.

## Maureen Gurrini

Aurora Public Schools, Colorado
Stephanie S. Gianneschi
Aurora Public Schools, Colorado

## Karen Lozano

Aurora Public Schools, Colorado
Centennial Ballroom G/H (Hyatt Regency)

## 545 <br> Learn to Count with Games and Puzzles

(Pre-K-2, Preservice and In-Service) Gallery Workshop
Change the way you think about counting. Learn how to develop number sense in young children through specially designed games and puzzles. Your students will be able to discover the base-ten number system in a relaxed and natural format. This presentation is based on research about how children recognize numbers. Come play with us.

Aldo Bacallao
Henry County Schools, McDonough, Georgia Mile High 2 B (Convention Center)

546

## Elapsed Time:

Why So Much Confusion?

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

Look closely at elapsed time to determine why students have so much difficulty with this concept. Through using traditional methods and analyzing student errors, we will conclude that this grades $3-5$ concept is anything but elementary. Comparing traditional and reform models, you will discover how reform models easily translate from concrete to pictorial.

## Barbara Ann Spotts

Johnny's Key, Trevorton, Pennsylvania
103/105 (Convention Center)

## 547 <br> Mathematical Knowledge for Teaching Measures as Opportunities for Professional Learning <br> (3-5, Preservice and In-Service) Gallery Workshop <br> Research has identified teachers' mathematical knowledge for teaching (MKT) as a vital component of effective teaching. We will share examples of MKT questions designed to assess teacher knowledge. Discuss ways these questions can be used in professional development or study groups to help teachers build MKT.

## Heather Howell

Educational Testing Service, Princeton, New Jersey
Barbara Weren
Educational Testing Service, Princeton, New Jersey
Shona Ruiz Diaz
Educational Testing Service, Princeton, New Jersey
110/112 (Convention Center)

## 548 <br> Decimal Fractions: Diagnosing and Supporting Student Reasoning <br> (3-8) Gallery Workshop <br> We will investigate a diagnostic assessment used to uncover students' understandings and misunderstandings of decimal fractions. We will explore activities designed specifically to address gaps in student understanding. You will receive a copy of the protocol and a related set of activities.

## Sherri Martinie

Kansas State University, Manhattan
607 (Convention Center)

## 2:45 P.M.-4:00 P.M.

## 549 <br> Exploring Polygon Properties with a Piece of Rope

## (3-8) Gallery Workshop

Explore the properties of triangles and quadrilaterals primarily by using a piece of rope or string. Van Hiele levels of geometric understanding show how these activities can move students to the necessary level needed for deductive reasoning in the formal high school geometry course.

## Dana T. Johnson

College of William and Mary, Williamsburg, Virginia

## Marguerite M. Mason

College of William and Mary, Williamsburg, Virginia
503/504 (Convention Center)

## 550 <br> Graph, Analyze, Play: Address the GAP and "Excel" in Math

## (3-8) Gallery Workshop

Increase your knowledge of spreadsheet creation and functions while exploring games, graphs, and problem solving. Simultaneously develop your students' working knowledge of technology while addressing both Process and Content Standards in your classroom. Explore simple yet powerful ways to incorporate spreadsheets into your current curriculum.

## Anna LaForgia

Council Rock School District, Newtown, Pennsylvania
Ginalouise Palermo
Cattaraugus-Allegany BOCES, Olean, New York
Alyse Jennifer Sciolla
Council Rock School District, Newtown, Pennsylvania 708/710/712 (Convention Center)

## 551 <br> Interactive Reasoning Leading to Proof with Online Tools and Games

## (3-8) Gallery Workshop

Make your classroom come alive while developing reasoning, sense making and proof. NCTM's free online games and interactive applets are perfect for you to demonstrate key content topics in your classroom and for your students to investigate mathematical conjectures on their own. We will use both physical manipulatives and online/mobile tools.

## David Barnes

National Council of Teachers of Mathematics, Reston, Virginia
Four Seasons 4 (Convention Center)

552

## May Math-alon: For a Fun and Fabulous Finish

## (3-8) Gallery Workshop

Are you looking for some fresh material for the closing weeks of school? Join us as we revisit some classics and introduce you to new ideas worth exploring. You'll leave with exciting activities to use on Monday, a wealth of resources to energize your students, and challenges to keep them mathematically fit through the summer.

## Martha Hildebrandt

Chatham University, Pittsburgh, Pennsylvania
Capitol Ballroom 5-7 (Hyatt Regency)

## 553 <br> Math Snacks: Animations and Video Games Teaching Middle School Math

## (6-8) Gallery Workshop

Math Snacks animations and video games are free tools accessible to teachers and parents, teaching essential middle school math concepts such as ratio, proportional reasoning, number line, and number sense. See these tools in action and use them tomorrow in your class. We will view an animation, play a game, and discuss student learning.

## Karen M. Trujillo

New Mexico State University, Las Cruces
Mile High 3 C (Convention Center)

## 554

## NASA: Distance-Rate-Time Math in

 Air Traffic Control(6-8) Gallery Workshop
Learn to predict and solve real-world problems in air traffic control by using a hands-on experiment, a Web-based interactive graphing tool, and print-based instructional materials. You will apply distance-rate-time relationships at the prealgebra and algebra levels. All materials are free and readily available on the Internet.

Rebecca Green
NASA, Moffett Field, California
Gregory Condon
NASA, Moffett Field, California
Mile High 1 A/B (Convention Center)

## 2:45 P.M.-4:00 P.M.

## 555 NT <br> Using Technology to Motivate the Struggling Learner <br> (6-8) Gallery Workshop

Students are motivated through video and television. Come participate with lessons designed to help catch students' interest with a short video. Topics are aligned with the Common Core State Standards and include suggestions to help keep your learners interested and involved. We will highlight the mathematical practices and share other resources.

## Carolyn Briles

Stonebridge High School, Ashburn, Virginia
Connie S. Schrock
Emporia State University, Kansas

$$
\text { Mile High } 4 \text { C/D (Convention Center) }
$$

## 556

## Using the Mathematical Practices as Scaffolding for Academic Language Development

(6-8) Gallery Workshop
Teachers who know the mathematics they are teaching and who understand the language challenges of developing mathematicsbased academic English are better at giving their English language learners opportunities to communicate and think through language. Explore the interplay of language, culture, and mathematics understanding.

Harold Asturias
University of California, Berkeley, Lawrence Hall of Science
Mile High 1 E/F (Convention Center)

## 557

## AP Calculus:

## Strategies to Support All Learners

(6-12) Gallery Workshop
Math teachers need to use strategies in Pre-AP and AP Calculus that will make calculus concepts and skills more accessible to students. We will try out strategies/graphic organizers: rule of 4 link sheets, sorts/matches, webs, concept splashes, labs, and learning stations. You will gain access to our website with hundreds of examples.

## Carol A. Hynes

Retired, Leominster Public Schools, Massachusetts
111/113 (Convention Center)

## 558 <br> Going in Circles: <br> Math Teachers' Circles

## (6-12) Gallery Workshop

Join a math teachers' circle focused on geometry and measurement. We will challenge you to construct certain polyhedra by using manipulatives called ZomeTools, and then you can explain the reasoning behind your construction or argue why the construction is not possible.

## Mary Garner

Kennesaw State University, Georgia
Virginia Watson
Kennesaw State University, Georgia
Beth Rogers
Kennesaw State University, Georgia
Mineral Hall D/E (Hyatt Regency)

## 559 <br> Linearity: A Moving Experience in Reasoning <br> (6-12) Gallery Workshop

Experience tasks adapted from curriculum materials developed in a professional development project that focused on linearity and graphing, two tough-to-teach, tough-to-learn topics in algebra. We describe teachers' experiences with the lessons and share video and samples of student work.

## Fay Zenigami

University of Hawaii, Honolulu

## Judith Olson

University of Hawaii, Honolulu

## Melfried Olson

University of Hawaii, Honolulu

## 506/507 (Convention Center)

## 560

## Powerful Online Tools Promote Powerful Mathematics

(6-12) Gallery Workshop
The free calculator available from Desmos (www.desmos.com) allows for exceptional graphing. Combine this tool with the resources at Illuminations (http://illuminations.nctm.org) to create powerful lessons. Learn how to combine these two resources to craft exceptional mathematical experiences for your students. BYOD, and get ready to get funky.

## Eli Luberoff

Desmos, San Francisco, California

## Patrick Vennebush

National Council of Teachers of Mathematics, Reston, Virginia
406/407 (Convention Center)

## 2:45 P.M.-4:00 P.M.

## 561 <br> Visual and Hands-On Proofs: Supporting English Language Learners and Others

(9-12) Gallery Workshop
Equity Strand Presentation
Support English language learners (ELLs) and struggling learners through a visual and kinesthetic approach to proof. Set the stage for success by helping ELLs attend to essential attributes of figures, and follow up by turning definitions, theorems, and postulates into manipulatives. See visual tools, collaboration, and discourse improve access to proof.

## Melissa Hosten

Chandler Unified School District, Arizona
Mile High 3 A (Convention Center)

## 562 <br> Developing Problem Solving in Algebra 1 through Modeling Experiences <br> (9-12, Preservice and In-Service) Gallery Workshop

The Common Core State Standards (CCSS) describe modeling both as a practice that spans $\mathrm{K}-12$ and as a high school conceptual category. This presentation emphasizes mathematical modeling as creative and productive problem solving. We will share tasks and student work aligned with the CCSS and adapted for students needing additional support to succeed in algebra 1 and beyond.

## Linda Venenciano

University of Hawaii, Manoa, Honolulu

## Hannah Slovin

University of Hawaii, Honolulu
Melanie Ishihara
University Laboratory School, Honolulu, Hawaii
201 (Convention Center)

## 563

## Engaging Activities to Introduce Key Ideas in AP Statistics

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

This activity-based gallery workshop will present tried-and-true activities to help students have that aha moment at the beginning of the unit. Expect to learn activities intended to introduce deep understanding of fundamental concepts such as standard deviation, confidence intervals, and hypothesis testing.

## McKendry Marano

Chicago Public Schools, Illinois

## Scott Galson

Chicago Public Schools, Illinois
704/706 (Convention Center)

## 564 <br> The Many Faces of Differentiation in Algebra

(9-12, Preservice and In-Service) Gallery Workshop
Investigate various types of differentiated material, discussing when, why, and how they can be used. Working from scenarios, we'll create material. We will discuss tiered worksheets, gradu-ated-difficulty problem sets, differentiated questioning, different contexts, and instructional mode. Support and challenge all.

## Allan E. Bellman

University of California, Davis
Katie S. Martinez
Canyon Crest Academy, San Diego, California
Centennial Ballroom E (Hyatt Regency)

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To learn more about our Singapore Math ${ }^{\circledR}$ programs and to see if they are right for you and your students, we welcome you to come by Booth 2031 or attend our Exhibitor Session that will explore one district's successful implementation.

## Implementing Singapore Math: A Collaborative Effort

Presenter: Johnette Roberts Saturday, April 20 from 10:00-11:00 am

Room 301

## 2:45 P.M.-4:00 P.M.

566<br>Building Mathematics Learning Communities with NCTM Reflection Guides<br>(Preservice and In-Service) Gallery Workshop<br>Explore journal articles that NCTM's Professional Development Services Committee has enhanced with reflection guides, available for free online. We will model how to use the reflection guides to build school-based professional learning communities.<br>NCTM Professional Development Services Committee National Council of Teachers of Mathematics, Reston, Virginia 603 (Convention Center)

## 3:30 P.M.-4:30 P.M.

## 567 M <br> Presentation of the 2013 NCTM Lifetime Achievement Awards

(General Interest) Session
This session will honor the 2013 recipients of the NCTM Lifetime Achievement Awards. The awards are bestowed to NCTM members who have exhibited a lifetime of achievement in mathematics education at the national level. The recipients will be introduced and will speak. Other grant recipients in attendance will also be recognized.
Mathematics Education Trust
National Council of Teachers of Mathematics, Reston, Virginia Centennial Ballroom F (Hyatt Regency)

## 568 <br> Designing Mathematical Outreach Programs and Activities for Underrepresented Populations

(General Interest) Session
Equity Strand Presentation
We have coorganized special programs for young women, Hispanic youth, and disadvantaged urban youth for almost twenty years. We will discuss the challenges and successes of different types of programs and formats. Participate in some of the problem-solving activities used in the outreach programs.

## Elizabeth G. Yanik

Emporia State University, Kansas
Marvin E. Harrell
Emporia State University, Kansas

## 569 <br> Finding a Triangle's Area: A Case Study in Vertical Articulation

(General Interest) Session
The task of finding the area of a triangle occupies students from elementary grades through calculus. Join me on a "vertically articulated" tour: from counting squares to square matrices, from geometry to trigonometry, to the cross product of two vectors. Historical highlights of the tour are the contributions of Heron and Georg Pick.

Margaret Coffey
Fairfax County Public Schools, Falls Church, Virginia
Mile High 4 E/F (Convention Center)

## 570 <br> Making Mathematical Connections: An Important Aspect of Reasoning

(General Interest) Session
Developing reasoning and sense making in the mathematics classroom can be considered a matter of finding, using, and creating the right connections. Learn about different kinds of mathematical connections and explore your own connection-making power.

## Thomas Evitts

Shippensburg University, Pennsylvania

Centennial Ballroom D (Hyatt Regency)

## 571 <br> Pedagogy and Student Engagement Enhanced with Livescribe SmartPens <br> (General Interest) Session

Discover how we engaged and motivated students to do their work at home, with the same detail and attentiveness as done in the classroom. Learn how to (1) cover more in your class; (2) personalize tutoring, without any extra work; (3) build your teaching portfolio for later use; and (4) engage low-, average-, and high-level students at once.
Peter M. Eley
Fayetteville State University, North Carolina
Elizabeth K. Rogers
Fayetteville State University, North Carolina
Mile High 2 C (Convention Center)

## 572 <br> Reasoning and Sense Making: Assessing Students on the Common Core State Standards

(General Interest) Session
Student behaviors in doing mathematics are crucial. The Common Core State Standards for Mathematical Practice highlight the goals, purpose, and importance of learning mathematics. Making sense of mathematics is key to organize, remember, and use patterns, formulas, and algorithms. From students' perspectives, these are too often practiced in isolation-without meaning.

## Henry S. Kepner

Past President, National Council of Teachers of Mathematics; University of Wisconsin-Milwaukee

405 (Convention Center)

## 573 <br> Science and Mathematics in Cinema: Can the Event Happen?

(General Interest) Session
President Series Presentation
The magic of the cinema allows the storyteller to engage our minds in the possible and the impossible. With proper editing, the silver screen can allow our minds to accept just about anything. Measurements can be made or inferences can be generated that enable us to analyze the scene. Explore how this can be done.

John C. Park
School Science and Mathematics Association; Baylor University, Waco, Texas

107/109 (Convention Center)

574

## Understanding Errors in Developmental Algebra: A Test-Paper-to-Chalkboard Framework

## (General Interest) Session

What can analyzing students' developmental algebra responses teach you? Explore the connections between student error type and outcomes in developmental algebra courses. Using error analysis models, receive suggestions and feedback on various methods that can inform your teaching and student outcomes.

## Ronny Kwan Eu Leong

Teachers College, Columbia University, New York, New York
Nathan Alexander
Teachers College, Columbia University, New York, New York
703 (Convention Center)

## 575 <br> Using Culturally Ambitious Teaching Practices in Urban Mathematics Classrooms

## (General Interest) Session

## Equity Strand Presentation

Explore the conceptualization of culturally ambitious teaching practices in mathematics that exemplify the tenets of culturally relevant pedagogy-academic achievement, cultural competence, and critical consciousness-and those of ambitious mathematics teaching practices for urban math classrooms.

## Lanette R. Waddell

Vanderbilt University, Nashville, Tennessee
Mile High 2 A (Convention Center)

## 576

What U.S. and Korean Math Educators Shared and Learned Together
(General Interest) Session
Korean and U.S. educators who participated in the post-ICME math education workshop on math curriculum and teaching in both countries report on key elements of the discussion and what they learned.

Myong-Hi Kim
State University of New York at Old Westbury
Oh-Nam Kwon
Seoul National University, South Korea

## Johnny W. Lott

Past President, National Council of Teachers of Mathematics; Retired, University of Montana, Missoula

Mineral Hall F/G (Hyatt Regency) Assessment

## 3:30 P.M.-4:30 P.M.

## 577

## Why Equity and Diversity Deserve Center Stage for Everyone

(General Interest) Session
Equity and diversity in mathematics education have traditionally been directed at minority students, female students, or English language learners. Explore how a closer look at the work of those who have been at the forefront of this movement will lead to a deep appreciation of how we could all do much better among all our students.

## Charles Roberts

Mercer University, Macon, Georgia
Kedrick R. Hartfield
Mercer University, Macon, Georgia
207 (Convention Center)

## 578

## Promoting Children's Invented Strategies for Number Computation in Primary Grades

(Pre-K-2) Session
Discuss effective instruction to promote children's invented strategies for whole-number computations in primary grades, highlighting development of mathematical models, teachers' roles, and the importance of positive social classroom culture that encourages children to communicate their mathematical ideas.

## Myoungwhon Jung

Northern Illinois University, Dekalb
Mile High 3 B (Convention Center)

## 579

## The Equals Sign: A Relation, Not a Command

(Pre-K-2) Session
Children often have misconceptions about the meaning of the equals sign. For example, children commonly claim that $9=9$ is false because no plus or minus sign is present. We will review existing research and examine relevant Common Core State Standards through videos of grades $\mathrm{K}-1$ students responding to formative assessment tasks.

## Charity Bauduin

Florida Center for Research in Science, Technology, Engineering, and Mathematics, Florida State University, Tallahassee

## Zachary Champagne

Florida Center for Research in Science, Technology, Engineering, and Mathematics, Florida State University, Tallahassee

Capitol Ballroom 1-3 (Hyatt Regency)

## 580 <br> Discover Mathlanding: Resources and Tools for Elementary Specialists and Teachers

(Pre-K-5) Session
Elementary math leaders and teachers will learn about Mathlanding, a project focused on improving the knowledge and instruction of elementary math. Developed to support professional development, Mathlanding harnesses the best free resources on the Web for use as an effective, technology-driven tool.

## Betsy Peisach

Maryland Public Television, Baltimore
Pat Hemler
Maryland Public Television, Baltimore
Mile High 1 C/D (Convention Center)


## 3:30 P.M.-4:30 P.M

## 581 <br> Problem Solving in Chinese Elementary Mathematics

## (3-5) Session

A classic Chinese problem places chickens and rabbits in a pen with 34 heads and 92 legs and asks how many of each. Chinese grade 4 textbooks have a simplified version that challenges students. We will discuss strategies for helping students develop mathematical reasoning, along with insights into the particular obstacles this problem poses.

## Shuzhu Gao

Capital Normal University, Beijing, China
David C. Wilson
State University of New York, Buffalo
605 (Convention Center)

## 582

## The Common Core State Standards Focus on Fractions

## (3-5) Session

We will examine the development of fraction understanding (grades 3-5) as described in the Common Core State Standards. Using problem-solving tasks and activities, we will focus on the transition from thinking of fractions as "parts of a shape" to numbers and on the new emphasis placed on the use of unit fractions and number lines.

## Judy Curran Buck

Consultant, Derry, New Hampshire
Capitol Ballroom 4 (Hyatt Regency)

## 583

## Two-Dimensional to ThreeDimensional Transitions in Grades 3-5

## (3-5) Research Session

Hear results from a study that explored the spatial thinking skills of students in grades 3-5, in particular the transition between two-dimensional and three-dimensional figures. We will also discuss implications related to curriculum and the implementation of the Common Core State Standards.

Duane C. Peck
Boise State University, Idaho
Jonathan Brendefur
Boise State University, Idaho
505 (Convention Center)

584

## Math Specialists Get Ready Now: Common Core State Standards Assessments Are Coming

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

Explore the full range of assessments your teachers must consider. Consider professional development opportunities that will move your teachers toward implementation of the Common Core State Standards for grades K-6 and focus on a variety of assessments, including classroom check-ups, response to intervention-related interviews, and constructed response items.

## Francis (Skip) Fennell

Past President, National Council of Teachers of Mathematics; McDaniel College, Westminster, Maryland

## Jon Wray

Board of Directors, National Council of Teachers of Mathematics; Howard County Public Schools, Ellicott City, Maryland

Beth Kobett
Stevenson University, Baltimore, Maryland
Four Seasons 2/3 (Convention Center)

## 585

## Facilitate English-Language Learner Participation through Questioning and Online Visual Models

(3-8) Session
Learn how to scaffold the teaching and learning of number concepts by focusing on the big ideas, using multiple representations, questioning, and technology. We will present strategies to plan and integrate the use of language and discourse to make mathematics accessible for all learners, including English language learners.

## Lauri Susi

Conceptua Math, Petaluma, California
Nora Ramirez
Nora Ramirez Consulting, Tempe, Arizona
401/402 (Convention Center)

## 3:30 P.M.-4:30 P.M.

## 586 <br> Moving Beyond the Right Answer: <br> Developing Students' Math Communication Skills

(3-8) Session
The Math Forum's rubric emphasizes a combination of good problem solving and strong mathematical communication. We score in six areas, including interpretation, strategy, accuracy, completeness, clarity, and reflection. We'll share stories from online and classroom exchanges of our efforts to help students develop mathematical communication skills.
Suzanne Alejandre
The Math Forum @ Drexel, Philadelphia, Pennsylvania

## Erin Igo

Colonial School District, New Castle, Delaware
601 (Convention Center)

## 587 <br> Creating a Classroom with More Learning and Less Exhaustion <br> (6-8) Session

Is your level of exhaustion <, >, or = to that of your students? We will use our thirty-four years of combined teaching experience to help your classroom become student centered while still meeting the needs of a diverse student body and addressing the Common Core State Standards. We will also share many strategies and resources.

## Dawn Bates

Cary Academy, North Carolina
Shannon J. Murphy
Cary Academy, North Carolina

$$
\text { Mile High } 4 \text { A/B (Convention Center) }
$$

## 588

## Problems That Connect Algebraic Thinking to Arithmetic, Geometry, and Measurement

(6-8) Session
This session offers a short immersion in teaching mathematics through problem solving. Learn how to help your students extend their understandings of arithmetic to algebra, geometry, measurement, data, and probability. In solving problems, we will employ the Mathematical Practices from the Common Core State Standards.

## Carol R. Findell

Boston University, Massachusetts

589
Getting the Most out of Homework: Strategies for Success

## (6-12) Session

Learn how to create homework that will engage your students in meaningful mathematics. Turn frustration into opportunities for learning. The authors of an NCTM book for secondary teachers will share strategies you can use to assign homework that will support deep understanding and result in more consistent homework completion.

## Robert Wieman

Rowan University, Glassboro, New Jersey
Fran Arbaugh
Pennsylvania State University, University Park
205 (Convention Center)

## 590 <br> Helping Students Make Better Sense of Quadratic Functions in Algebra

## (6-12) Session

The transition from linear to quadratic functions poses challenges for most algebra students. Drawing from our own research study, we will explore students' conceptions of different aspects of quadratic functions and offer classroom activities that can deepen students' understanding of quadratics through reasoning and communication.

## Volkan Sevim

Virginia Commonwealth University, Richmond
Victor V. Cifarelli
University of North Carolina, Charlotte
709/711 (Convention Center)

## 591 <br> Making a Computer Speak Math Like a Teacher Would

## (6-12) Session

Synthetic speech for math is just getting started: it doesn't always speak math the way you'd like and isn't interactive. We're developing synthetic speech for high school algebra that speaks it bet-ter-and you can customize it too. Funded by a grant from the U.S. Department of Education Institute for Education Sciences.

## Beth Brownstein

Educational Testing Service, Princeton, New Jersey

## Susan A. Osterhaus

Texas School for the Blind and Visually Impaired, Austin
108 (Convention Center)

## 3:30 P.M.-4:30 P.M

## 592 <br> Exploring the Common Core State Standards Practices in Secondary Classrooms

(9-12) Session
Previewing a new book from NCTM, we will draw connections between the Common Core State Standards for Mathematical Practice, the NCTM Process Standards (NCTM 2000), and the strands of proficiency from Adding It Up: Helping Children Learn Mathematics (National Research Council 2001). We will discuss how to implement the mathematical practices in secondary classrooms.

Kristen Bieda<br>Michigan State University, East Lansing

## Samuel Otten

University of Missouri, Columbia
702 (Convention Center)

4:00 P.M.-5:00 P.M.

### 594.1 CW

## Experience the Power: <br> Teaching Secondary Mathematics Online with MyMathLab

(General Interest) Exhibitor Workshop
Making the transition to digital? Learn best practices to achieve increased results and student success from award-winning author Elayn Martin-Gay. Attendees will experience MyMathLaban online curriculum that engages student learning and gives teachers all the tools they need to deliver all or a portion of their course online.

## Pearson

Upper Saddle River, New Jersey
301 (Convention Center)

### 594.2 CW <br> Using Math Work Stations to Teach the Mathematical Practices

(Pre-K-2) Exhibitor Workshop
Debbie Diller, author of Math Work Stations, shows a range of tools and strategies that help K-2 students build skills outlined in the Common Core State Standards Mathematical Practicessuch as strategic use of tools, patterns, and structures. Debbie will show video clips of students working individually and in small groups at math workstations.

## Stenhouse Publishers

Portland, Maine
303 (Convention Center)

### 594.3 CW <br> Math-U-See's Tier 3 Intervention

(3-8) Exhibitor Workshop
Learn about an effective Tier 3 Core Replacement intervention program designed to improve mathematical performance by explicitly teaching you the concepts, skills, and content needed to successfully teach math. Concepts of addition, subtraction, multiplication, and division will be shown and free sample manipulatives will be provided.

## Mastery Education Services/Math-U-See Fallbrook, California

302 (Convention Center)

## 594

What Were They Thinking? Going Beyond "Show Your Work"

## (Preservice and In-Service) Session

How do you know what your students are thinking? With smartpens, you can not only see their work but also hear their thinking and reasoning as they solve problems. See how we used smartpens with preservice elementary and middle-level math teachers and what we learned about our students' mathematical thinking.

Mary Lou Metz
Indiana University of Pennsylvania
Edel Reilly
Indiana University of Pennsylvania
705/707 (Convention Center)
Erin Moss
Millersville University, Pennsylvania

,

4:00 P.M.-5:00 P.M.

### 594.4 CW <br> Let's Be Clear about <br> Explicit Instruction

(6-12) Exhibitor Workshop
Discuss the benefits of an explicit instructional approach with regard to mathematical skills and concepts. Many mathematical examples will be shared, and implications of brain research will be applied to the practice of explicit instruction.

## Houghton Mifflin Harcourt

Boston, Massachusetts
304 (Convention Center)

## 4:45 P.M.-5:30 P.M.

## 595 NT

## New-Teacher Celebration

(Preservice and In-Service) Gallery Workshop
Celebrate the progress and possibilities as we look for new and early-career teachers and for students working to enter this exciting profession. Learn a little, laugh more, and win wonderful prizes. Come celebrate with us. You are the future.

Mile High 1 E/F (Convention Center)


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Integrating Science, Technology, Engineering, and Mathematics
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Gr. 3-8 / 978-0-325-04358-6/2013 / 192pp / $\$ 21.00$


Connecting Arithmetic to Algebra
Strategies for Building Algebraic Thinking in the Elementary Grades
Susan Jo Russell, Deborah Schifter, and Virginia Bastable
Gr. 1-6 / 978-0-325-04191-9 / 2011 / 176pp / \$21.00

Extending Children's Mathematics: Fractions and Decimals
Innovations in Cognitively Guided Instruction
Susan B. Empson and Linda Levi
Gr. 1-6/978-0-325-03053-1/2011/272pp / \$24.00


## Math Misconceptions

From Misunderstanding to Deep Understanding
Honi Bamberger, Christine Oberdorf, and Karren Schultz-Ferrell
Gr.PreK-5 / 978-0-325-02613-8/2010 / 200pp / \$21.00


Accessible Mathematics
Ten Instructional Shifts That Raise Student Achievement
Steven Leinwand
Gr. K-12 / 978-0-325-02656-5 / 2009 / 128pp / \$17.00

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## Saturday Planner

## HIGHLIGHTS

Closing Session: Viral Math Videos: A Hart-to-Hart Conversation (Presentation 724)

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REGISTRATION HOURS
7:00 a.m.-10:00 a.m.

## FIRE CODES

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

## 596

## Guided Math: Applying the Guided Reading Model to Math Instruction

## (General Interest) Session

Reconstruct a traditional mathematics classroom of direct instruction into an environment of shared learning, guided and independent practice. By meeting with small groups, teachers can reach the diverse mathematical needs of students while maintaining the rigor of grade-level curriculum.

## James Vreeland

Schaumburg School District 54, Illinois

## Amy Varchmin

Schaumburg School District 54, Illinois

## Tricia Leong

Schaumburg School District 54, Illinois
Mile High 2 A (Convention Center)

597<br>How Do I Know What They Know? Assessing Students' Understanding<br>(General Interest) Session<br>Equity Strand Presentation<br>Explore a variety of assessment tools, including graphic organizers and writing strategies, to get easy-to-use diagnostic, formative, and summative data on students' knowledge and understanding. These tools will support the implementation and assessment of Common Core State Standards in your classroom.<br>Beatrice Moore Luchin<br>NUMBERS Mathematics Professional Development, Houston, Texas

601 (Convention Center)

Don't miss the Closing Session on Saturday afternoon with featured speakers George Hart and Vi Hart

## 601 <br> Hoops, Home Runs, and Holes in One: All-Sports Math Night

(Pre-K-2) Session
Turn parents into math fans and students into "mathletes." Involve your community, school, and parents in an action-packed math night. Sport-related activities based on the Common Core State Standards will excite and motivate families to extend learning at home. Leave with all the necessary steps to implement a successful math night.

## Connie C. Jones

Muscle Shoals City Schools, Alabama
Wendi Thornton
Muscle Shoals City Schools, Alabama

## Madonna Choat

Muscle Shoals City Schools, Alabama
501/502 (Convention Center)

## 602 <br> Math Conferences: <br> Making Learning Visible

(Pre-K-5) Session
Confer one on one with your students to assess their level of mathematical understanding and lead them to their next steps in learning. Your students' level of mathematical comprehension becomes clearly visible as they communicate their thinking. With your support, students focus on setting learning goals and selfassessing their progress.

## Laney Sammons

Consultant, Tunbridge, Vermont
405 (Convention Center)

## 603 <br> Measure What Matters: <br> Building an Assessment System for Everyone's Learning

## (Pre-K-5) Session

Explore teacher-created rubrics, student anchors, and assessment tasks aligned with the Common Core State Standards, organized and accessible online, with integrated data collection and reporting. Boulder Valley Schools and the CDE have worked with www.forefrontmath.com to make this session-combining professional development, professional learning communities, and response to intervention-a reality.

## David Woodward

Boulder Valley School District, Boulder, Colorado

## 604 <br> Techniques and Activities to Teach Basic Computation to Exceptional Learners

(Pre-K-5) Session
Because a solid understanding of operation sense is essential to develop reasoning and computational skills, students with exceptional learning needs often struggle with conceptual learning. We will emphasize selected alternative procedures and activities to affirm conceptual understanding through explicit math instruction.

## Joseph Sencibaugh

Webster University, Saint Louis, Missouri
Angela M. Sencibaugh
Valley Park School District, Missouri
107/109 (Convention Center)

## 605 <br> Developing Reasoning through the 5E Learning Cycle <br> (3-5, Preservice and In-Service) Session

The use of the 5E Learning Cycle lesson plan model is growing in mathematics education, but still far too few math teachers know about it. We will specifically look at using technology in the Exploration phase to increase your students' comprehension and reasoning skills and to develop specific Mathematical Practices specified in the Common Core State Standards.

## Jennifer J. Wall

Northwest Missouri State University, Maryville
Heidi N. Beatty
Horace Mann Laboratory School, Northwest Missouri State University, Maryville

505 (Convention Center)

606<br>School and University Partnership: Teaching English Learners Mathematics and Science<br>\section*{(3-5, Preservice and In-Service) Session}<br>Elementary teachers, preservice teachers, and faculty members come together to create rigorous mathematics and science learning for English language learners. Listen to three school districts and faculty discuss professional development, content-specific strategies for English learners, and ways to strengthen teacher content knowledge.<br>Jenni L. Harding-DeKam<br>University of Northern Colorado, Greeley

205 (Convention Center)

## 607 <br> Teaching Students Principles for Comparing Fractions

(3-8) Session
Examine important principles that students must understand to compare fractions. We will explore each in a variety of contexts and models, including manipulative materials and free online tools, to help students understand and extend their previous understandings of whole numbers to fractions.

## John Laskarzewski

Conceptua Math, LLC, Petaluma, California
Mile High 4 E/F (Convention Center)

608

## Leveraging Middle School Students' Algebraic Understanding: Predict, Check, and Explain

(6-8) Session
Middle school teachers often search for ways to assess their students' understanding. Explore middle school students' conceptions of rate and proportionality, as well as ways to develop this understanding by using dynamic technology and the heuristic Predict, Check, and Explain.

## George J. Roy

University of South Florida St. Petersburg
Phillip Vahey
SRI International, Menlo Park, California

## Vivian Fueyo

University of South Florida St. Petersburg
703 (Convention Center)

## 610 <br> Quantitative Reasoning and the Teaching and Learning of Trigonometry <br> (6-12) Research Session

Explore the role of quantitative reasoning in the teaching and learning of trigonometry. I offer examples of instructional activities that aim to support students' construction of a coherent trigonometry. I also connect the instructional activities to the most recent research on students' learning of trigonometry.

## Kevin C. Moore

University of Georgia, Athens
203 (Convention Center)

## 611

## Using Magic to Motivate the Learning of Algebra

(6-12) Session

I will present many magic tricks that algebra explains. First, I will use cards, number cubes, a calendar, or mental patterns. Then I will show in general how the trick works. Finally, I will explain the trick, showing the algebra that you can share with your students to motivate them more.

John W. Gregory
University of Florida, Gainesville
709/711 (Convention Center)

## 613 FA

## Equitable Assessments in the Common Core State Standards Era

(9-12) Session
Experience and see how multiple entry-level tasks can help all students develop the Common Core State Standards for Mathematical Practice. Learn how to facilitate discourse around the tasks and other related pedagogical strategies.

## Marilyn E. Strutchens

Auburn University, Alabama
Judith R. Quander
University of Houston-Downtown, Texas Four Seasons 1 (Convention Center)

## 614 <br> Mathematical Games and Algebraic Proofs

(9-12) Session
Use number tricks, mental math, and unbelievable statements to help students understand algebraic proofs.
Mark Jaffee
Ohio Council of Teachers of Mathematics, Oxford
Mile High 4 A/B (Convention Center)

## 615 <br> Ciphers: Excel Applications to Engage Students

## (9-12, Higher Education) Session

We will focus on cryptography, cipher applications, and using Excel, with an emphasis on hands-on experiential learning opportunities for students. I will stress cross-disciplinary problemsolving methods that combine mathematics and technology. I will also present an overview followed by demonstrations.

## Susan G. Helser <br> Davenport University, Grand Rapids, Michigan

702 (Convention Center)

## 616 <br> Introductory Statistics without Lecture: Reactions, Reflections, and Revelations <br> (9-12, Higher Education) Session

Two sections of undergraduate introductory statistics were taught using different instructional methods, one with a teacher-centered lecture approach and one with a student-centered nonlecture, problem-solving approach. We will discuss observations from student and instructor reflections.

Melanie Autin
Western Kentucky University, Bowling Green
Hope Marchionda
Western Kentucky University, Bowling Green

## Summer Bateiha

Western Kentucky University, Bowling Green
108 (Convention Center)

617<br>Visualizing Patterns: Fibonacci Numbers and 1,000-Pointed Stars<br>(9-12, Higher Education) Session<br>Patterns in mathematics invite exploration and often arise in peculiar places. This talk will engage you in two such experiences appropriate for students in grades 9-12: discovering new relations among the Fibonacci numbers via strategic visual arrangements of them and determining how many stars have any number of points.<br>\section*{Scott Annin}<br>California State University, Fullerton<br>Jairo Aguayo<br>California State University, Fullerton

102 (Convention Center)

## 618 <br> Addressing the Crisis in Developmental Mathematics: The Dana Center's Approach

(Higher Education) Session
High failure in entry-level math is an obstacle for hundreds of thousands of college students. The Dana Center is working with community colleges to reform entry-level math to ensure access, improve success, and respond to workforce needs. We will discuss national initiatives, the center's work, and resources for institutions and faculty.

## Amy Getz

Charles A. Dana Center, University of Texas at Austin
Susan Hudson Hull
Charles A. Dana Center, University of Texas at Austin
Mile High 2 C (Convention Center)

## 619 <br> Using Problem-Based Learning Activities to Teach Mathematics

(Preservice and In-Service) Research Session
Problem-based learning (PBL) activities, historically used in medical schools, have not been investigated for their potential in teaching mathematics to candidates preparing to become elementary teachers. Explore a study that implemented PBL activities and problem-solving tasks as the sole means for teaching concepts of arithmetic to preservice teachers.

Loretta Diane Miller
Middle Tennessee State University, Murfreesboro
Brandon C. Banes
David Lipscomb University, Nashville, Tennessee
401/402 (Convention Center)

## 620

## Let's Develop Number Sense by Using Games in Grades K-2

(Pre-K-2) Gallery Workshop
Play number-sense math games designed to support Common Core State Standards for Mathematical Practices. You will receive a packet of twenty games to help children develop number and operation sense, place value, basic facts, and whole-number comparison and computation.

## Nancy Smith

Emporia State University, Kansas
Sheri Bevis
Emporia State University, Kansas
Four Seasons 4 (Convention Center)

## 621 <br> Creative Math: Patterns and Algebraic Thinking with Multicultural Sensory Materials <br> (Pre-K-2, Preservice and In-Service) Gallery Workshop <br> Experience effective instructional methods and hands-on activities using sensory materials, tested in inclusive classrooms with all ability levels. Creativity is used as a catalyst to help diverse children develop patterning and algebraic thinking skills. Share concrete experiences with multicultural 3-D sensory stickers as well as work samples. <br> Insook Chung <br> Saint Mary's College, Notre Dame, Indiana

111/113 (Convention Center)

## 622 <br> Fact Fluency Sooner Yields More Time for Common Core State Standards Mathematical Practices <br> (Pre-K-2, Preservice and In-Service) Gallery Workshop <br> 4 -group Math, a consistent, coherent, and additive visual model, enables all students to compose and decompose numbers in their working memory, arriving sooner at fact fluency. Experience and take away a checklist of 4 -group classroom activities to ensure that all your students know with confidence their addition and subtraction facts up to ten. <br> Lynn T. Kuske <br> Kuske Math, Bellevue, Washington

406/407 (Convention Center)

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Thursday April 18
6-8 pm

> Meet the Chief Reader and learn more about the AP* Exam

AP* STATISTICS
PANEL
Friday
April 19
6-8 pm


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Math \& YOU
The Power and Use of Mathematics RON LARSON

8:00 A.M.-9:15 A.M.

## 623 Bit <br> Tools for Kindergarten Number Sense Screening and Intervention

(Pre-K-2, Preservice and In-Service) Gallery Workshop
Discover a screening tool to identify weaknesses in number sense consistent with the Common Core State Standards. Experience hands-on activities for small-group response to intervention to build number sense in students.

## Nancy I. Dyson

University of Delaware, Newark

## Nancy C. Jordan

University of Delaware, Newark
Mile High 4 C/D (Convention Center)

## 624 <br> License Plate Math: Palindromes, Graphing, and Transformations

(3-5) Gallery Workshop

Using license plates as a context, we will analyze patterns. I will share a technique for graphing, and you will design your own license plates with given parameters. Our graphs will offer entry into transformational geometry, and a mapping from letters to numbers allows us to experience early algebra in context.
Ryan Andrew Nivens
East Tennessee State University, Johnson City
103/105 (Convention Center)

## 625 <br> Proving the Properties <br> (3-5) Gallery Workshop

Equality is the foundation for proving the commutative, associative, and distributive properties. Using the Process Standards, we will justify why these properties work through the use of conceptual, hands-on activities.

Rebecca J. Ward
Jamestown Elementary, Arlington County Public Schools, Virginia
Branch Wyatt Pronk
Kate Waller Barrett Elementary, Stafford County Public Schools, Virginia

Mile High 2 B (Convention Center)

## 626 <br> The Open Array and Ratio Table: Use Effective Tools Strategically <br> (3-5) Gallery Workshop

Engage in and examine mathematical tools to teach strategies, solve problems, estimate, and make conjectures. This interactive gallery workshop will focus on the open array and ratio table as effective tools to give all learners access to conceptual understanding and promote achievement through the content and practices of the Common Core State Standards.

Dina A. Williams
Los Angeles Unified School District, California
603 (Convention Center)

## 627 <br> Breaking the Rules: Discrete Math Problems You Can Count On

(3-8) Gallery Workshop
Bring discrete mathematics to life with fun problem-solving activities for your students. Get hands-on experience in breaking down systematic listing, combinations, and permutations through using puzzles, paper manipulation, and games. You'll get a folder of all presentation items.

Jenifer G. Martin
St. Ambrose School, Tucson, Arizona
Eric Welch
Drachman Montessori Magnet School, Tucson, Arizona
503/504 (Convention Center)

## 628 <br> Do Critical Thinking Tasks and Models Improve Algebraic Reasoning? Absolutely! <br> (3-8) Gallery Workshop

Algebraic reasoning skills improve when students explore algebraic reasoning through solving critical thinking tasks and building models. Explore using weight puzzles, Venn diagram puzzles, and tiles to enable students to discover and prove the rules of equations and systems of equations for themselves.

Leanne Luttrell<br>Lovin Elementary, Lawrenceville, Georgia

Mile High 3 C (Convention Center)

8:00 A.M.-9:15 A.M.

## 629 <br> Fractions: What's There to Talk About?

(3-8) Gallery Workshop
The Common Core State Standards Practice Standards present a view of math class focused on reasoning and discourse. What does this look like for fractions? We will discuss your reasoning about fractions, share strategies for encouraging students to do the same, and show video of student interviews and classroom discussions about fractions.

## Julie McNamara

Math Solutions, Sausalito, California
Patty Clark
Math Solutions, Sausalito, California
Mile High 3 A (Convention Center)

## 630 <br> Reasoning and Proof with Free NCTM Interactive Applets and Games

(3-8) Gallery Workshop

Enliven your classroom while developing reasoning, sense making, and proof. NCTM's free online games and interactive applets are perfect for you to demonstrate key content topics in your classroom and for your students to investigate mathematical conjectures on their own. We will use both physical manipulatives and online/mobile tools.

## Sarah DeLeeuw

National Council of Teachers of Mathematics, Reston, Virginia
708/710/712 (Convention Center)

## 631

## Seeing Is Believing: <br> Using Concrete Manipulatives to Model Fraction Division

## (3-8) Gallery Workshop

Why do we multiply by the reciprocal when dividing fractions? Explore hands-on activities that support meaningful use and understanding of common algorithms. Leave with instructional strategies that promote student understanding of fraction division as well as a set of rigorous, engaging tasks that support student success.

## Marsha McCrary

University of Georgia, Athens

## 632 <br> Middle School Intervention: What Does It Look Like?

(6-8) Gallery Workshop

Struggling middle school students need opportunities to make sense of fraction operations through hands-on explorations and classroom discourse. Explore specific intervention strategies designed to strengthen students' understandings while engaging in math classroom discourse protocols that encourage students to articulate their math reasoning.

## Kristi Cohen

Math Solutions, Sausalito, California
Sheila Yates
Math Solutions, Sausalito, California
104/106 (Convention Center)

## 633 <br> Struggling Learners Can Discover, Defend, and Demonstrate Common Core State Standards Practices <br> (6-8) Gallery Workshop <br> Participate in strategies that engage struggling students with high-cognitive-demand problems. Each problem offers the opportunity to demonstrate the mathematical practices, ways to motivate the learner, use of technology tools, scaffolding to make the problem accessible, conceptual development, and examples of formative performance assessments.

Connie S. Schrock
Emporia State University, Kansas
110/112 (Convention Center)

## 634

## They'll Need It for Calculus

## (6-8) Gallery Workshop

What ideas do middle school students need for calculus? Maybe not what you think. They need an awareness of change, approximation, and accumulation. We will work middle school tasks that use these ideas, and we will consider how these ideas build into the major ideas of calculus.

Christopher Danielson
Normandale Community College, Bloomington, Minnesota
704/706 (Convention Center)

## 635 <br> Teach Mathematical Modeling with GeoGebra

(6-8, Preservice and In-Service) Gallery Workshop<br>GeoGebra is an open-source learning technology that supports mathematical modeling and problem solving in school mathematics. Discover the main features of GeoGebra in the context of mathematical modeling and reasoning involving field-tested problem situations. Bring your laptop and join the dynamics of onsite explorations.

## Lingguo Bu

Southern Illinois University, Carbondale

## Frackson Mumba

Southern Illinois University, Carbondale

## Mary Wright

Southern Illinois University, Carbondale
Mile High 1 A/B (Convention Center)

## 635.1

## Calculator Scene Investigation

(9-12) Gallery Workshop
What type of polygon does this look like? This is a lesson on providing numerical evidence to prove the type of polygon. "It looks like a . . ." is not sufficient evidence. After we gather and calculate numerical evidence, and present a case, a decision will be rendered before the jury convicting the polygon of classification.

Mary R. Walz
Sauk Prairie High School, Prairie du Sac, Wisconsin
506/507 (Convention Center)

## 636

Hands On and Hands Off That Calculator
(9-12) Gallery Workshop
Using the TI-Nspire Navigator increases student involvement in any algebra lesson, but I also like to blend good old hands-on experiences. I will bring several classroom-ready activities that engage even reluctant learners. You will enjoy eating your own data, working with the TI-Nspire calculators, and using uncooked spaghetti for a lesson.

Heidi J. Rudolph
Orange City Schools, Pepper Pike, Ohio
201 (Convention Center)

## 637 <br> Using Formative Assessment to Engage in Reasoning and Proof <br> (9-12) Gallery Workshop

Using hands-on activities, we will share our experiences working with Shell Center formative assessment lessons. What does proof look like and how does reasoning happen daily? We'll highlight how to transform your classroom practices with formative assessment and the Common Core State Standards for Mathematical Practice.

Michael Gould
Math Solutions, Sausalito, California
Lisa Bush
Math Solutions, Sausalito, California
Mile High 1 E/F (Convention Center)

## 638 <br> Mathematics of Decision Making: An Alternative Fourth-Year Math Course <br> (9-12, Preservice and In-Service) Gallery Workshop

MINDSET is a collaboration among educators, engineers, and mathematicians to create and implement a curriculum to teach standard mathematics concepts by using math-based decisionmaking tools for a noncalculus, fourth-year mathematics curriculum. Experience the curriculum through solving multistep problems in real-world settings.
Karen S. Norwood
North Carolina State University, Raleigh
Tyler Pulis
North Carolina State University, Raleigh
403/404 (Convention Center)

8:30 A.M.-9:30 A.M.


#### Abstract

638.1 ew

Conquering the Common Core State Standards, One Fold at a Time (General Interest) Exhibitor Workshop In this hands-on session, create 3-D graphic organizers known as Notebook Foldables, designed to help you and your students conquer the Common Core State Standards (CCSS) one fold at a time. Participatory power is high as attendees see how to "chunk out" the CCSS and construct appropriate and naturally differentiated examples that can address the standards.


Dinah-Might Adventures, LP
San Antonio, Texas
302 (Convention Center)

Formative Assessment

Rt Response to Intervention

## 8:30 A.M.-9:30 A.M.

## 638.2 ew

## Engage Today's "Screen-Agers" through Interactive Digital Learning

(General Interest) Exhibitor Workshop
Our Comprehensive Common Core State Standards-based digital math texts use the high-yield strategies of direct quality instruction, student-driven advancement, and specific feedback. Our unique quickchecks reward effort, not multiple guessing, and use digital math buttons similar to those students will encounter on the upcoming PARCC and Smarter Balance assessments.

## Perfection Learning

Clive, Iowa
303 (Convention Center)

## 638.3 ew

## Best Practices in the Elementary Mathematics Classroom

(Pre-K-5) Exhibitor Workshop
A main topic of conversation in schools is preparing for the Common Core State Standards (CCSS). According to the CCSS, students must be engaged in the Mathematical Practices. However, what that looks like in classrooms is elusive. Explore videos that capture students engaged in these standards and discuss teacher moves and meaningful tasks that support this engagement.

Houghton Mifflin Harcourt
Boston, Massachusetts
304 (Convention Center)

## 9:30 A.M.-10:30 A.M.

## 639 FA RtI

Beyond Answers: Using Formative Assessment to Support Learning and Teaching
(General Interest) Session
Explore ways to intertwine learning and teaching by asking questions and adapting tasks that focus on deeper learning. We will use common textbook examples to create and adapt questions or problems to guide the instructional moves or identify areas to target in Tier 2 response to intervention.

## Barbara J. Dougherty

University of Missouri, Columbia
Four Seasons 1 (Convention Center)

## 640

## Instructional Strategies for

 Autistic Learners(General Interest) Session
Explore guidelines for teaching autistic learners. The discussion targets application related to instructional setting, social context, and lesson formats.

Kathleen M. McCoy
Mary Lou Fulton Teacher College Arizona State University, Tempe

$$
505 \text { (Convention Center) }
$$


www.du.edu/idge/conference/upcoming


## 9:30 A.M.-10:30 A.M.

## 641 <br> Logic Puzzles: A Friendly Path to Deductive Reasoning and Proof <br> (General Interest) Session <br> The Common Core State Standards call for students to "make conjectures and build a logical progression of statements to explore the truth of their conjectures . . . analyze situations by breaking them into cases . . . recognize and use counterexamples . . . justify their conclusions." What better way to develop these skills than with the puzzles of Raymond Smullyan?

William K. Tomhave
Concordia College, Moorhead, Minnesota
Mile High 2 C (Convention Center)

## 642 <br> Promoting Gender Awareness <br> (and Reasoning) in the Mathematics Classroom <br> (General Interest) Session <br> Equity Strand Presentation

After high school, many young women turn away from science and math careers. But gender attitudes affect classroom interactions throughout schooling, so we can't wait until high school or college to pay attention to gender. Examine research and classroom activities that foster gender equity in math instruction at all grade levels.

Jessica M. Deshler
West Virginia University, Morgantown
Elizabeth Burroughs
Montana State University, Bozeman
601 (Convention Center)

## 643 <br> Using Real-World Settings to Foster Mathematical Learning

(General Interest) Research Session
Want to create or implement lessons that include real-world contexts that engage students? Need a way to think about what questions to ask so that students make connections between realworld problem solving and the math? Explore a framework from a teacher-researcher team to develop context-based lessons.

## Luke Reinke

University of Pennsylvania, Philadelphia
Marsha Evans
William Penn High School, New Castle, Delaware
207 (Convention Center)

## 644 <br> Whatever Happened to Problem Solving in the Math Curriculum?

## (General Interest) Session

If problem solving is supposed to be the focus of school mathematics, why has it all but disappeared from our texts? I have written extensively about mathematical problem solving over the past forty years. Discuss my current thinking about the role of problem solving and what we should do to make it more central in our curricula.

## Frank K. Lester

Indiana University, Bloomington

Mile High 1 C/D (Convention Center)

## 645

## Florida's K-3 Common Core State

 Standards Mathematics Formative Assessment System(Pre-K-5) Session
Florida's K-3 Mathematics Formative Assessment System contains 376 formative assessment tasks available online for free. See how you can use these resources designed to increase your understanding of student thinking. Examine tasks and task-specific rubrics, and discuss videos of students responding to tasks.

Laura B. Lang
Learning Systems Institute, Tallahassee, Florida
Robert C. Schoen
Florida Center for Research in Science, Technology, Engineering, and Mathematics, Florida State University, Tallahassee

## Maureen F. Oberlin

Florida Center for Research in Science, Technology, Engineering, and Mathematics, Florida State University, Tallahassee

107/109 (Convention Center)

## 646 <br> One Small Teaching Change, One Giant Leap for Student Understanding

(Pre-K-5) Session

Two elementary school teachers changed their teaching of placevalue and whole-number operations to third graders, resulting in remarkable gains for students on a high-stakes test. See the activities the teachers used with students and how moving away from the standard algorithms moved students to better understanding.

9:30 A.M.-10:30 A.M.

## 647

## The Pioneers Speak: Lessons Learned from Successful Elementary Mathematics Specialists <br> (Pre-K-5) Session

School administrators expect elementary mathematics specialists to support teachers and their school's mathematics program while advancing student achievement. Get practical guidance for "operating as an elementary mathematics specialist," as suggested by successful specialists who have collaborated on a new NCTM publication.

## Patricia F. Campbell

University of Maryland, College Park
Vickie L. Inge
University of Virginia, Charlottesville
605 (Convention Center)

## 648 <br> F2 or Fraction Fun

(3-5) Session
Students continue to find fractions challenging. Learn games designed to help students develop a conceptual understanding of fractions.

## Sue Brown

University of Houston-Clear Lake, Texas
401/402 (Convention Center)

## 649

## Iterative Model Building:

 Questioning to Create Geometric Student Thinking Models
## (3-5) Research Session

Effective questioning in geometry offers teachers insight regarding student thinking. Learn about a research study that focused on questioning to help teachers conceptualize predictive models of student thinking. Explore how questioning and model building may improve your instructional practices.

## Crystal Vesperman

Indiana University, Bloomington
Julie Amador
University of Idaho, Moscow
705/707 (Convention Center)

## 650 <br> Unlocking Word Problems: It's More than Key Words

## (3-5) Session

Teaching students to rely on key words to solve word problems is misleading and sends the wrong message. The real key is to make sense of problems and the quantities involved. See videos of children making sense of problems. Gain experience analyzing students' thinking, and explore strategies to deepen those understandings.

## Kathleen Eichhorst

Tucson Unified School District, Arizona
Melinda Radon
Tucson Unified School District, Arizona
Mile High 2 A (Convention Center)

## 651 <br> Explain Your Thinking: Creating Comics, Videos, and Animations on iPads

(3-8) Session
See how students can quickly and efficiently create comics, videos, and animations on their iPads to show what they know and how they know it. We will share examples from number sense, ratio and proportion, geometry, and measurement.

## Leslee Francis Pelton

University of Victoria, Canada
Timothy W. Pelton
University of Victoria, Canada
203 (Convention Center)

## 652 <br> Proportional Reasoning and Graphing: A Powerful Connection <br> (3-8) Session <br> Explore the links between proportional reasoning and graphing by analyzing proportional reasoning tasks and student solution strategies. The goal will be to understand the growth in reasoning that occurs when students use graphs to represent proportional reasoning. <br> Kathleen Lynch-Davis <br> Appalachian State University, Boone, North Carolina <br> Signe Kastberg <br> Pudue University, West Lafayette, Indiana

102 (Convention Center)

## 653 <br> Writing: A Powerful Tool for Learning Math

(6-8) Session

Through the powerful tool of writing, students can express their understanding of math concepts in their own words by synthesizing information, organizing and clarifying their thinking, and combining separate ideas into a new whole. Writing helps students with problem solutions, identifying patterns, and precise vocabulary.

## Lynn Columba

Lehigh University, Bethlehem, Pennsylvania

## Bob Drake

University of Cincinnati, Ohio
501/502 (Convention Center)

## 654

## Beyond $y=m x+b$ :

## Deepening Students' Understanding of Linear Relationships

## (6-8, Preservice and In-Service) Session

Knowing the formula $y=m x+b$ is different from understanding when to apply it and why it works. We will consider problems that highlight multiple representations and forms of linear relationships. We will then consider how looking across these different problems, representations, and forms can help students explain why $y=m x+b$ works.

## Amy F. Hillen

Kennesaw State University, Georgia
Kelly W. Edenfield
Carnegie Learning, Pittsburgh, Pennsylvania
405 (Convention Center)


## Framing Questions to

 Engage All Students in Geometric Reasoning(6-12) Session
Guided by the goals of the Common Core State Standards for Mathematics and the use of student work, this session offers an approach to geometry teaching that allows students to use reasoning to critique arguments about geometric ideas and relationships. Capturing the excitement of mathematics, attendees engage in tasks that promote understanding.

Carol Malloy spent twenty years teaching mathematics in public schools across the United States. At the university level, she taught secondary mathematics methods in a Master of Arts in Teaching program, mathematics for middle and elementary preservice students, and PhD coursework in curriculum and foundations.

## Carol E. Malloy

University of North Carolina, Chapel Hill; Glencoe/McGraw-Hill, Wilmington, North Carolina

Four Seasons 2/3 (Convention Center)

## 656 <br> Make Math Count: Financial Literacy for a Technological World

(6-12) Session
Address NCTM strands of problem solving, communication, and connections while fully engaging students with Excel, Web 2.0 technologies, and games created by Robert Kyosaki. Resources are available online that address income, careers, retirement, and linear and exponential growth, along with assessments differentiated by learning styles.

## Leslie Williams

Cary Academy, North Carolina
Michael Raskevitz
Cary Academy, North Carolina
Mile High 4 A/B (Convention Center)

## 2013 Regional Conferences:

 Baltimore - October 16-18 Las Vegas • October 23-25 Louisville • November 6-8

# 657 <br> <br> Cognitively Guided Instruction <br> <br> Cognitively Guided Instruction Works for Students with Cognitive Works for Students with Cognitive Disabilities, Too Disabilities, Too <br> (9-12, Higher Education) Session <br> Problem-solving approaches have been used in a limited capacity in special education. At the conclusion of our three-year study, it is apparent that methods consistent with cognitively guided instruction also support the conceptual understanding of students with significant intellectual disabilities. Learn how and why the approach is so effective. 

## Stacey N. Skoning

University of Wisconsin-Oshkosh
108 (Convention Center)

## 658 <br> What, No Book? I Want to Take His Class

(9-12, Higher Education) Session
What gives students the best opportunity to succeed? We explored this question by offering sections of college algebra where one section used an e-book and online homework, whereas the others used a traditional textbook and had no instructor-graded homework. What worked best? We share our results, including what was most important to students.

## Daniel R. Miller

Millikin University, Decatur, Illinois

## Paula R. Stickles

Millikin University, Decatur, Illinois
205 (Convention Center)

659

## Data + Reflection/Reasoning + Modeling = Stronger Statistics Self-Efficacy

(Higher Education) Session
A college algebra with statistics course was crafted for students needing a mathematics general education credit, then taking a statistics class in a nonmath department. The curriculum uses experiential learning and concrete-representational-abstract instructional models, allowing students to mathematically describe statistical data.
Theresa R. Westbrook
Texas State University, San Marcos
702 (Convention Center)

## 660 <br> Promoting Mathematical Practices through the Common Core State Standards Assessment Frameworks <br> (Preservice and In-Service) Session

The Common Core State Standards for Mathematics assessment consortia frameworks have the potential to encourage teachers to use and have their students use the Mathematical Practices. We will explore analysis and application of the frameworks, along with tasks that require the Mathematical Practices.

## Judith E. Jacobs

University of Michigan, Ann Arbor
703 (Convention Center)

## 661 <br> Teacher's Preparation for Geometric Black-Box Tasks with iPad <br> (Preservice and In-Service) Session

Technology-based geometric black-box tasks formerly constructed by a teacher motivate students to explore unknown behavior of geometric objects and formulate/justify a conjecture. See how to prepare a black-box task for iPad and how the questioning strategies differ from those in a paper-and-pencil setting.
Taehoon Choi
University of Iowa, Iowa City
Melissa McAninch
University of Iowa, Iowa City
Laurentius A. Susadya
University of lowa, Iowa City
Mile High 4 E/F (Convention Center)


## 9:45 A.M.-11:00 A.M.

## 662 <br> Building a Solid Foundation with Number Sense

(Pre-K-2) Gallery Workshop
Do you have students counting on their fingers to add? Those students lack number sense. Number sense can't be taught; it has to be experienced. So come experience activities involving a rekenrek, number path, and subitizing that will help develop your students' number sense and their ability to add and subtract flexibly and fluently.
Lynn Rule
Naperville SD 203, Illinois
Christina Tondevold
Mathematically Minded, Orofino, Idaho
403/404 (Convention Center)

## 663 <br> Digging Deeper into Early Numeracy: Getting Number Facts to Stick

(Pre-K-2) Gallery Workshop
Expand your knowledge and range of activities for early number sense. Work with ten frames and number bracelets, and be actively engaged with activities to anchor to ten. We'll use a thirties chart to construct the concepts of more and less and improve mathematical vocabulary. Let's "play" math and discuss the research that supports these activities.
Ricky M. Mikelman
Staff Development for Educators, Peterborough, New Hampshire
704/706 (Convention Center)

## 664

## It's a Rhombus, Not a Diamond: Meaningful Geometric Experiences

(Pre-K-2) Gallery Workshop
The Common Core State Standards Practices focus on students' abilities to problem solve, reason, and understand that math makes sense. Exploring two-dimensional shapes and their properties will supply the context for discussing teaching strategies that support implementing the Common Core State Standards.

Amy C. Mayfield<br>Math Solutions, Sausalitio, California<br>Lisa Rogers<br>Math Solutions, Sausalito, California

603 (Convention Center)

665

## Number and Operations: Building Links between Addition and Subtraction

(Pre-K-2) Gallery Workshop
Addition and subtraction are closely linked. Learn strategies to reinforce the connection between these operations and to develop flexible thinking. I will show practical ways to develop number facts for both operations through the use of visual materials and games.
Rob Nickerson
ORIGO Education, St. Charles, Missouri
503/504 (Convention Center)

## 666

## Names in the Neighborhood: Names, Identity as a Math Springboard <br> (Pre-K-5) Gallery Workshop <br> Equity Strand Presentation

Is your name length typical for the class? For your age and enthnicity? When Maximilliano plays a Scrabble-like name game with Ana, who has the advantage? Use your first name as a basis for math explorations. Receive well-tested materials based on a National Science Foundation-funded project to engage diverse learners in reasoning, data, algebraic thinking, and more.

## Marlene Kliman

TERC, Cambridge, Massachusetts
Nuria Jaumot-Pascual
TERC, Cambridge, Massachusetts
506/507 (Convention Center)

## 668

Take a "Chance": Connecting Probability to Rational Number Reasoning
(Pre-K-5) Gallery Workshop
Come and play several games that will challenge your students to reason about rational numbers as they investigate sample space, probability, and fairness. Learn about common student misconceptions, strategies, and reasoning that occurred when students played these games in the classroom.
Megan H. Wickstrom
Illinois State University, Normal
Nicole M. Enzinger
Illinois State University, Normal

9:45 A.M.-11:00 A.M.

## 669 <br> REFractions: The Representing Equivalent Fractions Game

## (3-5) Gallery Workshop

Explore REFractions: The Representing Equivalent Fractions Game. In this hands-on activity, students reason with linked concrete, pictorial, and symbolic models to make sense of fraction concepts from the Common Core State Standards, including representation, equivalency, addition, and comparison.

## Stephen I. Tucker

Utah State University, Logan
Mile High 3 C (Convention Center)

## 670

## Why Is $1 / 3$ Greater than 0.3 ?

## (3-5) Gallery Workshop

Explore rational numbers, decimals, and percents through handson activities with various manipulatives. Exposing students to various models helps increase fractional fluency as they compare, convert, and calculate with numbers between 0 and 1 . You will experience and leave with sample activity plans.

## Nivan Saada

Hoosier Academy, Indianapolis, Indiana
George McDermott
IMC Education Services, Indianapolis, Indiana
Mile High 1 A/B (Convention Center)

## 671

## In Control of Cognitive Demand

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

The Common Core State Standards demands rich math tasks. Experience the difference in engaging students in cognitively demanding tasks; understand how to manage cognitive demand throughout lessons from concept to mastery; and create rich tasks to invite students to examine, attempt, question, and explore different possibilities for problem solving.

## Maricela Rincon

Las Cruces Public Schools, New Mexico
Jennifer L. Trantham
Las Cruces Public Schools, New Mexico
Mile High 2 B (Convention Center)

672
Thinking Outside the Box: A Chocolatey Optimization Problem

(3-8) Gallery Workshop

Imagine that you are a chocolatier who wants to sell cubed-shaped chocolates. To maximize your profit, you need to minimize the cost of packaging. Using your mathematical knowledge of measurement and data, geometry, and functions, you will design and construct the ideal candy box through this Common Core State Standards-aligned, hands-on performance task.

## Rita Sanchez

Teachers College, Columbia University, New York, New York

## Greta Keltz

Teacher College, Columbia University, New York, New York
111/113 (Convention Center)

## 673 <br> We're Writing in Secret Code: I Think It's Algebra

(3-8) Gallery Workshop

Manipulatives hold a key to understanding the beginnings of algebra. Strategies for creative uses of manipulatives foster understanding so students see what expressions such as $3 b r$, $l w h$, and $x+2 y$ really mean. A concrete foundation for math notation and symbols will demystify a complex code for students. Let's help students learn the secret code.

Janie L. Zimmer<br>Research-Based Education, Reading, Pennsylvania<br>Robert O. Jesberg Jr.<br>Consultant, Chalfont, Pennsylvania

Four Seasons 4 (Convention Center)

9:45 A.M.-11:00 A.M.

## 674

## Gone Fishing: Proportions and Probability in a Real Scientific Context

## (6-8) Gallery Workshop

By using techniques for estimating populations, we can explore mathematical topics such as proportions and probability. This activity uses the scientific method to determine which pond fish population matches each initial proportion and then estimates changes in the population while incorporating issues of likelihood and uncertainty.

Jill A. Cochran<br>Berry College, Mount Berry, Georgia

110/112 (Convention Center)

## 675

## Reinventing and Connecting Rules for Dividing Fractions

(6-8) Gallery Workshop
Using fraction bars, we will reinvent at least three rules for dividing fractions by fractions.

## Yvelyne Germain-McCarthy

University of New Orleans, Louisiana
Mile High 4 C/D (Convention Center)

## 676

## Technology + Choice = Success

(6-8) Gallery Workshop
Equity Strand Presentation
Do you long to hear your students say these three little words, "I love math"? Discover how hands-on lessons infused with technology and choice have transformed our students into highly motivated, engaged, successful learners. Highlighted technology will include TI technology, math in movie clips, the SMART Board, Google Earth, and Voki avatars.

Melissa G. Jackson
Deptford Township Schools, New Jersey
Meredith A. Howell
Deptford Township Schools, New Jersey
708/710/712 (Convention Center)

677

## Connecting Math Competitions to the Common Core State Standards

## (6-12) Gallery Workshop

The chairs of the American Mathematics Competitions will share tips for connecting problems found on mathematics competitions with the Common Core State Standards. Learn how topics important for contests can also connect to the Common Core State Standards. Award-winning teachers with high-scoring teams will also share their insights.

Steven R. Dunbar
Mathematical Association of America, Washington, D.C.
Margie Raub-Hunt
Mathematical Association of America, Washington, D.C.
LeRoy Wenstrom
Mathematical Association of America, Washington, D.C. 406/407 (Convention Center)

## 678

## "Log" in to the Common Core State Standards

(9-12) Gallery Workshop
Experience the Mathematical Practices of the Common Core State Standards in a unit on logarithms. Explore engaging strategies for teaching logs, including discovery activities, an earthquake project, and formative assessment ideas. Get resources you can use in class on Monday.

## Andrea J. VanDunk

GreenDot Public Schools, Los Angeles, California
Judy Suyong Song
Lincoln High School, Los Angeles, California
Mile High 3 A (Convention Center)

## 679 <br> Reasoning and Proof in Graph Theory and Combinatorics <br> (9-12, Preservice and In-Service) Gallery Workshop <br> We will focus on using graph theory and combinatorics as a natural way to enhance students' skills in reasoning and proof. You'll consider some basic counting and graph theory problems, and we will share and discuss student work on these same problems. <br> Patricia A. McKenna <br> Metropolitan State University of Denver, Colorado <br> 103/105 (Convention Center)

## 9:45 A.M.-11:00 A.M.

## 680

## An Invitation to Experience Online Lesson Study Firsthand

(Preservice and In-Service) Gallery Workshop
Are you interested in lesson study but lack the support system and resources necessary to participate? Connect with other teachers just like you and form lesson study groups that will interact online synchronously and asynchronously.

## Cheryl Fricchione

Drexel University School of Education, Philadelphia, Pennsylvania

## Diane Austin

Crooked Oak Public Schools, Oklahoma City, Oklahoma
607 (Convention Center)

## 681 <br> Connected Knowledge: How Students Learn Math with Understanding

(Preservice and In-Service) Gallery Workshop
Understanding develops when students make connections. Explore how students develop connected knowledge by engaging in the NCTM Process Standards and Common Core State Standards for Mathematical Practice. We will do math and analyze classroom vignettes. Having written two new books for NCTM, we will share strategies to teach for connected knowledge.

## Sarah Ryan

University of Delaware, Newark

## Kathy Ernst

Consultant, West Brattleboro, Vermont

## Robert Wieman

Rowan University, Glassboro, New Jersey
104/106 (Convention Center)

10:00 A.M.-11:00 A.M.

### 681.1 CW

## If a Computer Can Grade It, It's Not Worth Asking

## (General Interest) Exhibitor Workshop

This talk discusses constructionist learning ideas and the use of instructor-driven formative assessment and coaching to bring about a radically different approach to math education. Here, the art and science of mathematics takes precedence over static algorithms.

## Making Math

Champaign, Illinois
302 (Convention Center)

### 681.2 CW

## Meeting the Practice Standards with Models from Math in Context

(General Interest) Exhibitor Workshop
The Standards for Mathematical Practice in the Common Core State Standards ask students to model with mathematics. Students are expected to identify quantities and map relationships by using math tools, including diagrams, two-way tables, and formulas. Explore models from MiC that can be used to analyze situations and draw conclusions, and receive a free Number Tools workbook.

## Britannica Digital Learning

Chicago, Illinois
304 (Convention Center)

### 681.3 CW <br> Implementing Singapore Math: A Collaborative Effort

(Pre-K-5) Exhibitor Workshop
Explore how the Primary Mathematics series was used as a tool to build a higher-performing mathematics program in a low-performing school. The presenter will share data, pictures, teacher reflections, successes, and challenges of implementing this focused and coherent curriculum.
Singapore Math
Oregon City, Oregon


## 682 <br> Classroom Discourse: Strategies to Engage and Support English Language Learners

(General Interest) Session
Explore strategies to engage English language learners in the mathematics classroom, develop their mathematical understandings through strategic communication strategies, and assess their knowledge of mathematics. I will share approaches to support teacher-student and student-student communications.

## Gladis Kersaint

Board of Directors, National Council of Teachers of Mathematics; University of South Florida, Tampa

703 (Convention Center)

## 683 <br> Selecting Problems with High Cognitive Demands to Meet Specific Goals <br> (General Interest) Research Session

When selecting high-thinking tasks to meet specific instructional goals, we should consider several aspects of the tasks: numerical structure, context, difficulty level, and strategies likely to be elicited. Explore research studies related to proportional reasoning to show the importance of these considerations when selecting tasks.

## Jessica Audet de la Cruz

Assumption College, Worcester, Massachusetts
501/502 (Convention Center)

## 684

## Tools and Technology for Modern Math Teaching

(General Interest) Session
A lot of new tools and technology exist to help our students learn more meaningful mathematics. The question you may have now is, "Which tools deserve our limited time and resources?" I will offer a framework to guide you toward useful tools and more modern math teaching.

Dan Meyer
Stanford University, California
Four Seasons 1 (Convention Center)

685

## Computers in Early Childhood: <br> Getting the Best of All Worlds

(Pre-K-2) Session
Technology use in pre-K-grade 2 is increasing. Use it to offer the best of all possible worlds-the worlds of mathematics, physical models, and software models; the worlds of number, geometry, measurement, and patterning; and the appropriate, combined pedagogy of the worlds of activities, problem solving, and tools.

Julie Sarama<br>University of Denver, Colorado

Douglas H. Clements
University of Denver, Colorado
705/707 (Convention Center)

## 686 <br> Math Rotations That Cover the Core <br> (Pre-K-2) Session <br> Differentiate your math instruction while making sure you are covering the Common Core State Standards. Our math workshop rotation structure engages children at all instructional levels through hands-on manipulative activities. Participate to discover the structure of rotations while addressing NCTM strands.

Shannon F. McFadden
Holland Hall School, Tulsa, Oklahoma
Susan B. Connor
Holland Hall School, Tulsa, Oklahoma
Mile High 4 A/B (Convention Center)

## 687 <br> Improve Fluency and Mental Strategies for Girls

(Pre-K-2, Higher Education) Session
Equity Strand Presentation
We need to improve fluency and mental strategy use in girls. Both have been linked to long-term (three-year) performance on state tests. Girls, in contrast to boys, are less fluent and are less likely to use mental strategies. Get recommendations to improve fluency and strategy use.

## Martha Carr

University of Georgia, Athens
Mile High 4 E/F (Convention Center)

## 688

## Helping Teachers Listen and Respond: An Assessment Framework

(Pre-K-5) Session
Developers from the Teaching Integrated Math and Science Project share their assessment framework and tools to help teachers define clearer expectations, provide useful feedback, and respond to various students' needs in grades 1-5.

Jennifer Mundt Leimberer
University of Illinois at Chicago—Learning Sciences Research Institute

Diana Berndt
University of Illinois at Chicago—Learning Sciences Research Institute

702 (Convention Center)

## 689 <br> Manipulatives, Models, and Symbols: Representations for Building Number Sense <br> (Pre-K-5) Session <br> Developing students' number sense entails multiple and varied experiences over time. Using concrete, visual, and symbolic representations can facilitate this process. We will share specific classroom examples to highlight how to select, make, use, and link representations effectively to build and enhance students' number sense.

## Jessica Shumway

Utah State University, Logan

## Joan Kyriopoulos

Edith Bowen Laboratory School, Logan, Utah
Mimi Granados
Bailey's Elementary School for the Arts and Sciences, Falls Church, Virginia

205 (Convention Center)

## 690 <br> Multicultural Mathematics Children's Literature Books

(Pre-K-5) Session
Enter the world of using authentic multicultural children's literature to teach mathematics in your elementary classroom. We will share actual books, mathematics teaching ideas, and implemented lessons in a way to build culturally responsive teaching into your classroom through rigorous mathematics learning.
Stacy Loyd
University of Northern Colorado, Greeley
Jenni L. Harding-DeKam
University of Northern Colorado, Greeley
Boni Hamilton
University of Colorado Denver, Centennial
709/711 (Convention Center)

## 691 <br> Number and Operations: Eliciting Student Thinking through Questioning Techniques <br> (3-5) Session <br> Improve your questioning techniques to better understand student thinking and reasoning in number and operations. Watch classroom video scenarios and reflect on your questioning strategies while engaging in a discussion to improve conceptualization of student thinking. <br> Julie Amador <br> University of Idaho, Moscow <br> Crystal Vesperman <br> Indiana University, Bloomington

405 (Convention Center)

## 692 <br> 50 Problems + 50 Books = 100 Percent Engagement

(3-8) Session
Engage in mathematical problems posed from children's literature. We will share a list of fifty books, with a problem posed from each book. Solve samples while emphasizing the Standards for Mathematical Practice. You will also consider elements of a good problem so you can develop problems from other books.

## Jeremy J. Winters

Middle Tennessee State University, Murfreesboro
Cindy Cliche
McFadden School/Middle Tennessee State University, Murfreesboro

203 (Convention Center)

# 693 <br> <br> Activities to Help English <br> <br> Activities to Help English Language Learners Increase Language Learners Increase Geometric Understanding 

 Geometric Understanding}
(6-8) Session
Equity Strand Presentation
English language learners often struggle to learn the special language of geometry, and this challenge hampers concept understanding. Participate in classroom-tested activities with manipulatives that enhance geometry language acquisition. I will share activity handouts and free resources.

## Bill Jasper

Sam Houston State University, Huntsville, Texas
601 (Convention Center)

## 694

## Do Math Snacks Lessons Increase Students' Content Knowledge? Yes.

(6-8) Research Session

During the fall of 2011, nine teachers from five schools in two districts used Math Snacks animations and lessons to teach ratio, proportional reasoning, and number line concepts to more than 300 sixth- and seventh-graders. The students were given a pretest and a posttest to measure student learning. Explore the findings of this pilot study.

## Karin Wiburg

New Mexico State University, Las Cruces
Karen M. Trujillo
New Mexico State University, Las Cruces
Mile High 2 A (Convention Center)

## 695 <br> Financial Literacy: How to Establish a Classroom Mini-Economy

(6-8) Session
The Classroom Mini-Economy is a form of economics instruction in which students participate in a classroom economy that simulates real-world economic activity. Students apply for classroom jobs, run businesses, pay taxes, buy rental properties, and make investments. Students also have the chance to create companies and generate income.

## Cecile M. Kuntz

Ottawa Catholic School Board, Orleans, Canada
Mile High 1 C/D (Convention Center)

696

## Building Motivation and Success with Low-Income, Diverse Learners

## (6-8, Preservice and In-Service) Session

Working with low-income, diverse learners requires understanding, nurturing, high expectations, and creativity. I have worked with this special population for ten years. Hear about and discuss research-based information and strategies you can apply immediately to increase achievement and reduce the impact of their circumstances on their success.

Donna M. Stumpp
Denver Public Schools, Colorado
505 (Convention Center)

## 697 <br> Predator-Prey Models Meet the Common Core State Standards

(6-12) Session
We will examine mathematical models of interactions between humans and two species of fish. Discussion will focus on developing a model through data collection and analysis by using a stochastic simulation, adjusting the simulation to produce more realistic results, and formulating a discrete deterministic model.

Steven L. Blumsack<br>Learning Systems Institute, Tallahassee, Florida

Robert C. Schoen
Florida Center for Research in Science, Technology, Engineering, and Mathematics, Florida State University, Tallahassee

401/402 (Convention Center)

## 698 <br> Problems That Turn Algebra Procedures into Good Group Discussions

(6-12) Session
Tasks that generate group discussion of algebraic procedures are hard to find. I will give sample problems designed to probe understanding of algebraic procedures, and I will use video clips to show how students can be engaged in reasoning, discussion, and use of academic language to gain a deeper understanding than practice alone can give.

Judith M. Kysh
San Francisco State University, California
108 (Convention Center)

# Regional <br> Conferences \& Expositions BALTIMORE, MARYLAND I OCTOBER 16-18 

 LAS VEGAS, NEVADA I OCTOBER 23-25 LOUISVILLE, KENTUCKY I NOVEMBER 6-8
## Help Your Students Succeed in a Competitive World

In a global society with rapidly changing technology your students need the right tools to succeed. So take the next step to help them growfocus on the latest topics for math education at an NCTM Regional Conference. By attending, you and your colleagues will:

- Learn practices central to teaching the Common Core State Standards;
- Discover ways to include 21st-century learning in the math classroom;
- Explore new and effective differentiated instruction methods; and
- Refine your assessment techniques.

Whether you're a classroom teacher, coach, administrator, teacher-intraining, or math specialist, this conference has something for you.

11:00 A.M.-12:00 P.M.

## 699 <br> Using iPads to Enhance the Mathematics Classroom

(6-12) Session

Technology can help foster reasoning and sense making and motivate students. Come learn how to use free iPad apps to supplement instruction and mathematical understanding. If you have an iPad, bring it.

## Ayanna Franklin

North Carolina State University, Raleigh
Emily Thrasher
North Carolina State University, Raleigh
Mile High 2 C (Convention Center)

## 700 <br> Essential Understandings in 9-12 Statistics: Preparing for the Common Core State Standards

(9-12) Session
Explore the NCTM Essential Understandings book for grades $9-12$ statistics. We will discuss big ideas that help teachers understand concepts fundamental to implementing the Common Core State Standards statistics and probability standards effectively. We will also discuss some challenges in learning, teaching, and assessing these concepts.

## Stephen J. Miller

Winchester Thurston School, Pittsburgh, Pennsylvania
Roxy Peck
California Polytechnic State University, San Luis Obispo
Robert Gould
University of California, Los Angeles, Department of Statistics
207 (Convention Center)

## 701 <br> Using Computers Effectively in a High School Mathematics Class

(9-12) Session
Computers can be used to deepen students' understanding, connections, interest, and engagement with high school mathematics. Learn about ways to use the computer as a vehicle to achieve these things. Topics include programming, computer graphics, Wolfram-Alpha, warm-ups and quizzes using Google Docs, flipteaching, research, and useful websites.

## Michael B. Herzog

St. Gregory College Preparatory School, Tucson, Arizona
102 (Convention Center)

702

## Convincing Arguments and Proof with Core Math Tools

(Preservice and In-Service) Session
Explore how Core Math Tools have helped prospective teachers to use mathematics technology well to inspire and produce arguments and proofs and to create related lessons for high school students. Mathematics topics include big ideas and essential understandings of geometry, function, statistics, and proving.
Rose Mary Zbiek
Pennsylvania State University, University Park
107/109 (Convention Center)

703<br>Preservice Elementary Teachers' Beliefs about Diversity: Teaching Culturally Relevant Mathematics<br>(Preservice and In-Service) Session<br>Equity Strand Presentation<br>Learn the results of a study of preservice elementary teachers' beliefs about diversity and how exploring culturally relevant mathematics (CRM) affected their classroom practice. Discuss why some teachers were more successful with CRM and barriers that kept others from teaching CRM.<br>Shelly M. Jones<br>Central Connecticut State University, New Britain

605 (Convention Center)

## 11:30 A.M.-12:00 P.M.

## 704

## Lessons from the U.S. National Presentation at ICME-12 in Korea

(General Interest) Burst
The U.S. was one of five countries invited to make a National Presentation (NP) at the 12th International Congress on Mathematical Education (ICME-12) in Korea, July 2012. Hear what we learned during the NP, which included a weeklong exhibition, five invited talks on U.S. math education, video clips of U.S. teachers, and short presentations.

## Patrick Scott

LANL Foundation, Española, New Mexico
Ann Lawrence
U.S. National Commission on Mathematics Instruction, Washington, D.C.

607 (Convention Center)

## 705

## Using Video Study to Improve the Design of Mathematics Lessons

(General Interest) Burst
Learn the essentials of video study, a proven method to enhance your mathematics instruction through iterative lesson design at a pace that matches your busy schedule. Topics include satisfying legal hurdles for classroom videotaping, tips and technical knowhow for better video, and maximizing the use of video for lesson enhancement.

## Thomas E. Ricks

Louisiana State University, Baton Rouge
Mile High 1 E/F (Convention Center)

## 706 <br> Calendar Time: Small (Yet Powerful) Changes Strengthen Place-Value Understanding

(Pre-K-2) Burst
Learn how readily implemented changes in counting and recording "days in school" can significantly increase children's place-value understanding. I will describe a research study examining the impact of introducing Digi-Blocks and other supportive materials during calendar time. Early data show gains in $\mathrm{K}-2$ children's ten-structured thinking.
Judith L. Fraivillig
Rider University, Lawrenceville, New Jersey
104/106 (Convention Center)

## 707 <br> Sharing Student Lessons with iBooks Author, iBooks, and an iPad <br> (Pre-K-5) Burst

See how math lessons were imported into iBooks Author to create iBooks that focus on specific math concepts. An iPad is used to access the lessons in the iBook. This is an innovative way for math supervisors, math coaches, and teachers to share lessons. You will have access to an iBook containing sample lessons.

Larry Osthus
Thinking With Numbers, Cedar Falls, Iowa
Four Seasons 4 (Convention Center)

708

## Coaching Fifth Graders to "See" the Standards for Mathematical Practice <br> (3-5) Burst

See how one teacher used the Standards for Mathematical Practice (SMP) explicitly and embedded them into lessons. Look at before-and-after snapshots of students' work. With teacher guidance, the students themselves "looked for" examples of SMP in their own work. Once we "saw" what the SMP looked like, we went back and worked problems with this new framework in mind.

Michael O'Connor
Wayland Public Schools, Massachusetts
110/112 (Convention Center)

## 709 <br> The Hunger Games: Can You Survive the Constructed-Response Arena?

(3-5) Burst
Teachers will learn three strategies combining literature and math to understand and answer constructed-response math questions.
This presentation will include student examples and instructional tools, along with activities that support whole-group and smallgroup instruction.

## Lloyd Goldberg

Clark County School District, Las Vegas, Nevada
Ann Moody
Clark County School District, Las Vegas, Nevada
201 (Convention Center)

710<br>Skyping Problem-Solving Tasks to Improve Fraction Instruction<br>(3-5, Preservice and In-Service) Burst<br>Skype technology connected a fifth-grade classroom with preservice teachers to complete fraction problem-solving tasks. These tasks align with the grades 3-5 fraction progressions and mathematical practices for the Common Core State Standards. We will share the process and results involving students' ability to decompose fractions.<br>Kim Hartweg<br>Western Illinois University, Macomb<br>Bob Mann<br>Western Illinois University, Macomb

403/404 (Convention Center)

Formative Assessment Intervention

## 711 <br> Hot Mathematical Questions: Encouraging Proof through Community, Curiosity, and Celebration

 (3-8) BurstMathematics has always been advanced by creative and persistent thinkers who see uncertainty as a personal challenge. How can we create in our classrooms similar communities, where students clamor to prove and disprove each other's conjectures? Learn how to inspire students to generalize, develop and "publish" their own mathematical proofs.

Sylvia B. Glauster
The Ancona School, Chicago, Illinois
111/113 (Convention Center)

## 712

## Inquiring Minds Want to Know: Supporting Proportional Reasoning with Warm-Ups

(3-8) Burst
Using daily class warm-ups can be an opportunity to explore, build, and support student reasoning and sense making; prepare students for new concepts; and build students' mathematical proficiency. The goal will be to understand how inquiry can be used in short time segments. Examples will come from explorations of proportional reasoning.

## Signe Kastberg

Pudue University, West Lafayette, Indiana
Laura Sellars
Westlane Middle School, Washington Township, Indianapolis, Indiana

Michelle R. Reel
Westlane Middle School, Washington Township, Indianapolis, Indiana

603 (Convention Center)

## 713 <br> Who is 7? The Characteristics of Numbers Project

## (3-8) Burst

Integrate the 21st Century Competencies by investigating the characteristics of numbers. Students work together to become experts through exploration and research of the internal, external, and social/cultural characteristics of a number. Final presentations offer an opportunity to share this knowledge creatively.

## Robert W. Krech

West Windsor-Plainsboro Schools, Princeton Junction, New Jersey
Mile High 3 A (Convention Center)

## 714

## A Horse of Another Color: Laying the Foundation's Interdisciplinary Strategies

(6-8) Burst

The Common Core State Standards's emphasis on informational texts calls for innovative ways to engage students. Using a short nonfiction passage about Seabiscuit as a springboard, this presentation models an interdisciplinary unit for math, science, social studies, English, and fine arts. Math concepts include rate of change and applying statistical information.
Michelle Stie-Buckles
Laying the Foundation, a division of the National Math and Science Initative, Dallas, Texas

## Bobette Ray

Laying the Foundation, a division of the National Math and Science Initative, Dallas, Texas

503/504 (Convention Center)

## 715 <br> Bursts of Patterns: Our Path to Success in Algebraic Thinking <br> (6-8) Burst <br> Learn how we helped our students be able to consistently and accurately generalize patterns. They build, describe, extend, graph, and generalize patterns with ease. Join us as we share our strategies, and leave with sets of patterns you can use in your own classroom. <br> Elizabeth Warren <br> Estacada Junior High School, Oregon <br> Sally Wood <br> Estacada Junior High School, Oregon <br> Mile High 3 C (Convention Center)

## 716 <br> Alternative and Creative Assessments in the Math Classroom

(6-12) Burst

We will present various ways to assess students creatively. Going beyond simply grading homework or giving quizzes and tests, we will explore links to art, history, writing, and technology. We will also present ways to administer standard quizzes and exams creatively. Spend thirty minutes with us to discover some new assessment ideas.

## Michelle Neely

Kent Denver School, Denver, Colorado
Melissa Archey
Jeffco Public School, Evergreen, Colorado
506/507 (Convention Center)

## 717 <br> Effective Use of Virtual Manipulatives: Ready to Create Your Own? <br> (6-12) Burst <br> Can you touch a line? Virtual manipulatives have different capabilities to offer that traditional counterparts cannot. Explore well-established websites of virtual manipulatives and what those websites have to offer you. We will also share a virtual manipulative that we created using GeoGebra.

## S. Asli Ozgun-Koca

Wayne State University, Detroit, Michigan
Michael Meagher
Brooklyn College-City University of New York

## Michael Todd Edwards

Miami University, Oxford, Ohio
Mile High 1 A/B (Convention Center)

## 718 <br> Knowing What They Really Know: Alternative Assessments to Motivate

 (6-12) BurstResearch findings indicate that alternative assessment methods are not used enough in math departments (Dogan 2011), and high-level tests continue to dominate. Consider essentially assessing students before learning and "testing" while teaching. Explore examples of involving students in determining entry-level instruction points and reviews.
Natalia P. Darling
University of Cincinnati Blue Ash College, Ohio
Mile High 2 B (Convention Center)

## 719 <br> Modeling with Linear Functions: Three Ideas in Thirty Minutes

## (6-12) Burst

Receive overviews for three problems accessible to grades 6-9 students with a range of ability levels. The problems require minimal preparation and materials. Get an overview of the modeling cycle and techniques to enhance reasoning and communication. Activities include the Lefty-Righty Experiment, Cutting the Rope, and the Border Problem.

## Shelley Kriegler

Center for Mathematics and Teaching, Los Angeles, California
Mile High 4 C/D (Convention Center)

## 720 <br> Algebra 2 Skills Lab: Building Understanding and Ensuring Success <br> (9-12) Burst

With more rigorous standards and higher expectations for all students to be college and career ready, interventions must be focused and intentional. Algebra 2 Skills Lab offers "just in time" support to struggling students. We will discuss course design, implementation, necessary resources, student selection, and preliminary results of the course.

## Jayne L. Wingate

Cheyenne South High School/Laramie County School District \#1, Wyoming

406/407 (Convention Center)

## 721

## A Math Teacher Visits a Computing and Engineering World

(9-12, Higher Education) Burst
Learn about the Einstein Fellow Distinguished Educator program, followed by sharing in the experiences of a mathematics teacher serving in the Computer and Information Science and Engineering office of the National Science Foundation. We will discuss the new AP CS Principles course and how that relates to mathematics departments.

Deborah G. Britt
Einstein Fellow Program, CISE Office of the National Science Foundation, Arlington, Virginia

704/706 (Convention Center)

Formative Assessment

RtI Response to Intervention

11:30 A.M.-12:00 P.M.

## 722 <br> Tilings and Tessellations: Using Geometer's Sketchpad for Investigation and Proof <br> (9-12, Preservice and In-Service) Burst

Explore translation, reflection, and the merge feature in The Geometer's Sketchpad to create tilings and tessellations. See how to use geometric concepts in conjunction with Sketchpad to create a lesson that stimulates investigation and ideas for proof about tessellation in the Euclidean plane.

Melissa McAninch
University of Iowa, lowa City
Taehoon Choi
University of Iowa, lowa City
Laurentius A. Susadya
University of Iowa, Iowa City
708/710/712 (Convention Center)

## 723

Working with K-12 Teachers
to Develop Concept-Based Mathematics Curricula
(Preservice and In-Service) Burst
Curriculum development is professional development. We spent the last year working with K-12 educators developing conceptbased curriculua. Using the work of Lynn Erickson as a guide, teachers created curricula that embody the learning progressions, instructional shifts, and mathematical practices of the Common Core State Standards.

## Mary E. Pittman

Colorado Department of Education, Denver
Brian Sevier
Colorado Department of Education, Denver
103/105 (Convention Center)

12:30 P.M.-1:30 P.M.

## 724

# Viral Math Videos: A Hart-to-Hart Conversation 

## Closing Session by Vi Hart and George Hart

Remarks by NCTM President Linda M. Gojak
Father and daughter, George and Vi Hart make videos in their own styles with the common goal of showing real, awesome, beautiful math. Vi learned some math from George, and George learned about videos from Vi, and you can learn how they create content that educates, inspires, and makes people want to share.

Vi Hart is a full-time mathemusician at Khan Academy and is best known for her mathematical videos on YouTube. She has more than 30 million video views on her YouTube channel, with more than 300,000 subscribers. She has more than 15,000 Twitter followers and more than 29,000 fans on Facebook. Her most popular video, "Hexaflexagons," is approaching 5 million views.

George Hart is a mathematician and sculptor whose work has been exhibited around the world. Hart's research explores innovative ways to use computer technology in the design and fabrication of artwork. Previously a research professor in the computer science department at Stony Brook University, recently he has helped to found the Museum of Mathematics and design its initial set of exhibits. He also makes videos that show the fun and creative sides of mathematics.

## Vi Hart

Khan Academy, Mountain View, California

## George Hart

Mathematics Sculptor, Stony Brook, New York

# ANNUAL MEETING \& EXPOSITION 

April 9-12 م New Orleans, LA

## Big Ideas the Big Easy!

Join us in New Orleans for the nation's largest math education event. More than 700 presentations will offer ideas, tools, and strategies you can immediately apply to help your students grow and succeed. Whether you're a classroom teacher, coach, administrator, teacher-in-training, or math specialist, NCTM's Annual Meeting has something for you.

- Learn practices central to teaching the Common Core State Standards.
- Gain practical solutions to transform your classroom into an environment rich in problem solving.
- Discover new and effective methods to incorporate technology in the classroom.
- Get answers to pivotal questions and concerns of new and soon-to-be teachers.

Helping students to develop essential math skills begins with you. This is the math education event you can't afford to miss!


## Do your students see

## fractions as numbers?

## Connect fractions to the real world for both students and teachers

- Curriculum with differentiated lessons, manipulatives, and digital resources engage students with the hands-on experience needed to make sense of fractions.
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Visit
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## NEW! EXCLUSIVE!

Hands-On Standards®, Common Core Fractions Teacher Resource Guides


## Enter To WIN!

Be one of the first to stop by booth \#1645 to enter to WIN a Hands-On Standards Book and
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Visit us at Booth \#1645 to enter!

[^3]Student Achievement, Math Instruction, Common Core and Next-Gen Assessments Got You Waiting to Exhale?

## You're in Denver!

Breathe Easy with Math Solutions

## Thursday, April 18

10:15-10:45 AM - Math Meets Jayne Bamford Lynch (Differentiation)
1-2 PM - Author Meet \& Greet
3:15-3:45 PM - Math Meets
Nancy Canavan Anderson
(Classroom Discussions)

## Booth \#1031

Visit the Breathe Easy Oxygen Bar!

Friday, April 19

> 3:15-3:45 PM - Math Meets

Jayne Bamford Lynch (Differentiation)
Complimentary Coffee \& Snacks Every Day!

WIN books from our award-winning library!

WIN an Amazon Kindle!

Thursday, April 18 | 11 AM - 12 PM | Marilyn Burns Lessons Learned from Interviews about Numerical Reasoning Convention Center, Four Seasons 2/3

DENVER
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## Tips for a Rewarding Annual Meeting and Exposition

- Access the Conference App for conference alerts and up-to-theminute information. Visit www.nctm.org/confapp.
- Access speaker handouts at www.nctm.org/planner.
- Become familiar with the layout of the Colorado Convention Center and the Hyatt Regency Denver by reviewing the floor plans on pages 182-185.
- Visit the NCTM Bookstore for the latest NCTM educational resources, and the Member Showcase, where you can pick up free resources and learn more about how NCTM can help you professionally.
- Stop by the Denver Information Booth for information on the Denver area.
- If attending the conference with colleagues, attend different presentations and share your learned knowledge after the conference.
- Silence cell phones 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 from the conference.
- Tell us about your conference experience by responding to the postconference online survey.
- Be safe! Remove your name badge when you leave the conference facilities at the end of the day.


## Registration and Access to Presentations

You must wear your badge to enter all presentations and the NCTM Exhibit Hall. NCTM will charge a $\$ 10$ fee for replacement badges.

By registering for the NCTM 2013 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, audiotape, 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 take place Monday-Wednesday, April 15-17, at the Colorado Convention Center. The Research Presession Registration Area is in Lobby A.

The Research Presession will open with a poster session in Lobby A, beginning at 5:00 p.m. The Opening Session will take place at 7:00 p.m. on Monday, April 15, followed by a welcome reception. Concurrent sessions will begin at $8: 30 \mathrm{a} . \mathrm{m}$. on Tuesday, ending with a research poster session. The Wednesday program begins at 8:30 a.m. with a Linking Research and Practice Plenary, followed by concurrent sessions until 4:00 p.m. Registered NCTM Annual Meeting attendees may attend Wednesday's Research Presession presentations at no extra charge with their badge.

## Technology At Your Fingertips

## Wi-Fi Access

The Colorado Convention Center offers complimentary wireless access in the lobby and common areas.

## Conference App

The NCTM conference app for iPhones and iPads, also available as a mobile Web app for Android, Windows Mobile, and BlackBerry devices, keeps you connected with every aspect of the Annual Meeting. The free app allows you to search sessions, speakers, and exhibits; view the Exhibit Hall floor plan; highlight your favorite presentations; get a Twitter feed update (official Twitter hashtag \#NCTMDenver); and rate presentations. Stay up to date with the latest program changes. Visit www.nctm.org/confapp for more information.

## Presentation Handouts

Attendees can access available electronic presentation handouts through the conference app and online planner.

## Online Planner

The online planner is a great way to search the conference program book, set up your schedule, and download presentation handouts. The online planner is up to date with the latest program changes and presentation information. Visit www.nctm.org/planner.

## All Year Long

When you return home, don't forget to download NCTM's free Android or iPhone app. The NCTM app gives you easy, efficient access to timely NCTM information throughout the year-from updates on new publications and best sellers to the latest information on upcoming conferences and professional development opportunities. You can be up to the minute on NCTM activities, teaching tips, and classroom resources. The new app also includes Facebook and Twitter feed updates. Visit www.nctm.org/nctmmobile/ for more information and to download the app.

## The NCTM BuzzHub

Check out the NCTM BuzzHub. This exciting new area has everything "NCTM" all in one convenient location:

- Check your e-mail, or look up speakers and exhibitors at the Internet Station.
- View and play online math strategy games while learning about NCTM's Illuminations Project and other online resources at Calculation Nation ${ }^{\ominus}$.
- Listen to NCTM journal editors present short sessions that discuss how to write an article for NCTM journals, become a reviewer, and more at the NCTM Presentation Spotlight Stage. A schedule is available on page 8 and 76 and in the on-site Daily News. A full schedule of BuzzHub presentations is available on page 22.
- Relax, mingle with other attendees, and stay connected with the latest social media updates at the Social Networking Lounge.
- Pick up free take-home activities and resources, sample journals, and more at the Member Showcase. You'll have the chance to update your membership information, learn more about the benefits, and participate in a prize drawing. Plus, when you join or renew your NCTM membership you will receive a free $t$-shirt. Supplies are limited.
- Capture your experience at the Green Screen Photo Lounge, Sponsored by Pearson.

The NCTM BuzzHub a new space, with new ideas to help you all the way around. Check us out in the Exhibit Hall during exhibit hours.

## Bookstore

Save 25 percent off the list price on all purchases made at the onsite NCTM Bookstore, located in the Exhibit Hall at the Colorado Convention Center. View firsthand all the publications that NCTM has to offer. You will also find a variety of specialty products that you can use as gifts, prizes, and incentives to spread the word about the importance of mathematics. Start your wish list today by previewing NCTM's wealth of resources at www.nctm.org/catalog/.

Note on Sales Tax Exemptions: To qualify for sales tax exemption in the NCTM Bookstore, you must furnish a copy of a Colorado tax exemption certificate, issued by the state, at the time of purchase. The law requires NCTM to keep a copy of the certificate, which we cannot return to you. You must pay with a purchase order, check, or credit card from the school to which the exemption certificate is issued. NCTM cannot accept personal checks, personal credit cards, and cash 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.

## 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 Colorado Convention Center. (Some 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 at the entrance.

## Information Booth

The NCTM Information Booth will be in the lobby of the Colorado Convention Center. Local staff will answer your questions. They can also assist you with directions and local information, from transportation and historical sites to shopping and entertainment.

## Lost-and-Found

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

## Restaurant Reservations

Explore the fabulous restaurants of Denver. Stop by the Information Desk located in the lobby at the Colorado Convention Center. The friendly staff will be available to offer recommendations and make reservations.

## Bag and Coat Check Service

A bag and coat check service is available for you to store your belongings during conference hours for a nominal fee. During program hours, you can check your items at the bag check, located at the Colorado Convention Center, Thursday through Saturday. Please pick up all items each day by closing time; you may not leave items overnight.

## First Aid

A first-aid station will be staffed at the Colorado Convention Center during the NCTM program. If you need medical services while in Denver, please check with the hotel concierge for the closest medical facilities. For any medical emergency, call 911 without hesitation.

## General Information

## For Your Child's Safety

Because of the size and nature of the NCTM 2013 Annual Meeting and Exposition, this event is not an appropriate setting for children under 16 years of age. Your hotel concierge will be able to recommend activities available for children while you attend 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 Colorado Convention Center.

## 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 2013 Annual Meeting and Exposition. In the days after the Annual Meeting, you will receive an e-mail asking you to evaluate your meeting experience. Please complete the conference attendee survey. Use the Conference App to rate specific presentations you attend. Your feedback is important to us and will be instrumental in planning future meetings.

## Exhibit Hall Information

## Exhibits

Make time to visit the NCTM Exhibit Hall. The hours allow ample opportunity to explore, try out, and purchase products and services for your classroom or to help you meet your career goals. You can also meet the people who produce these products, get fresh ideas, and see how products work. The hall will be open on Friday from 10:00 a.m. to 6:00 p.m. To give you dedicated time to visit the exhibits, no presentations will take place between $4: 30$ p.m. and 6:00 p.m. on Friday. Check out the list of exhibits and a map of the Exhibit Hall on pages 192-193.

## Exhibitor Workshops

Do you want more in-depth and personal interaction with exhibitors? Plan to attend the Exhibitor Workshops. Held on Thursday, Friday, and Saturday, these workshops offer a wide variety of topics. See the program for Exhibitor Workshop offerings, indicated by eW after the presentation number.

## Professional Development Books from NCTM-Written by and for Mathematics Teachers

## Find these and more books at the NCTM Bookstore located in the Exibibit Hall! Save $25 \%$ off the ist price on all purchases, including special products!



## Smarter Together! Collaboration and Equity in Elementary Mathematics

by helen featherstone, sandra crespo, LISA M. JILK, JOY A. OSLUND, AMY NOELLE PARKS, AND MARCY B. WOOD
©2011, Stock \#13785
List Price: \$36.95
Conference Price: \$27.71


NATIONAL COUNCIL OF teachers of mathematics


Disrupting Tradition: Research and Practice Pathways in Mathematics Education BY WILLIAM TATE, KAREN KING, AND CELIA ROUSSEAU ANDERSON
© 2011, Stock \#13515 List Price: \$31.95
Conference Price: $\$ 23.96$

## Strength in Numbers:

 Collaborative Learning in Secondary Mathematics bY ILANA HORN©2012, Stock \# 13791 mor $4 \mathbf{U}$ List Price: \$39.95
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Once you have joined NCTM, membership in an NCTM Affiliate is a terrific way to round out your professional involvement. Affiliates offer you an opportunity to link with teachers in your state, region, or city for support, professional development opportunities, community outreach, political advocacy, and information sharing.
The host Affiliate for the NCTM 2013 Annual Meeting and Exposition and the Affiliates-at-Large are listed below. E-mail the Affiliate contact for membership information.
NCTM has more than 200 Affiliates throughout the United States and Canada. For a list of all organizations affiliated with NCTM and information on how to join, please see the Affiliate Directory on the NCTM Web site at www.nctm.org/affiliates/.

## Affiliate Information

Colorado Council of Teachers of Mathematics
Laurie Hillman, laurie.hillman@weldre4.k12.co.us

## Affiliates-at-Large

Adult Numeracy Network
Lynda Ginsburg, ginsburg@rci.rutgers.edu
Association of Mathematics Teacher Educators
Sandra Cooper, sandra_cooper@baylor.edu

## Association of State Supervisors of Mathematics

Charles Watson, chaswatson@sbcglobal.net
Benjamin Banneker Association, Inc.
Mylah Deliford, mdeliford@hotmail.com
Council for Technology in Mathematics Education
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North American Study Group on Ethnomathematics
Blidi Stemn, catbss@hofstra.edu
National Council of Supervisors of Mathematics
Ruth Harbin Miles, smilesalot4u2@yahoo.com
Society of Elementary Presidential Awardees
Martha Short, mshort@ldd.net
TODOS: Mathematics for ALL
Maria Torres, met@edcom.us
Women and Mathematics Education
Dorothy Buerk, buerk@ithaca.edu


## Floor Plans

Colorado Convention Center
Meeting Room Level
14TH STREET


## Floor Plans

Colorado Convention Center

## Ballroom Level



## Floor Plans

## Hyatt Regency Denver

Third Level


## Floor Plans

## Hyatt Regency Denver

Fourth Level


## Hotel Information and Nap



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The National Council of Teachers of Mathematics is the 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 80,000 members and more than 200 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, e-mail nctm@nctm.org, or call (800) 235-7566.

Notes
This certificate is presented to

$\underset{\substack{\text { Linda M. Gopak } \\ \text { President, NCTM }}}{\text { N }}$

NATIONAL COUNCIL OF
teachers of mathematics

NCTM Annual Meeting and Exposition
April 17Г20, 2013
Denver, Colorado

Name of Provider: National Council of Teachers of Mathematics
Educators Name: $\qquad$
Description of Professional Development Activity: This is a four-day annual meeting sponsored by the National Council of Teachers of Mathematics. More than 700 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 <br> Name(s) | Start/End <br> Time | PD Time <br> Earned |
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I certify that the above-named educator accrued the indicated number of professional development hours.
Kichoon Yang
Executive Director, NCTM
Linda M. Gojak
President, NCTM
Please check with your state education agency and local administration to determine whether these conference hours can be used for professional development credits.

Visit www.nctm.org/membership to learn more and join! CONTACT INFORMATION (PLEASE PRINT) All fieds marked with an * are required for processing
First Name* $\qquad$ Last Name*

Please check ONE box for preferred mailing address, but please complete both columns for our records:
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Standing Yearbook Order Plan: Check this box to receive each NCTM Yearbook as it becomes available. Yearbooks may be returned in resalable condition within 30 days and you may cancel your plan at any time.
NOTE: Membership pricing valid through May 31, 2013. 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 to a digital edition). Select ONE journal below:
$\mathbf{\$ 8 1} \quad$ Teaching Children Mathematics (PreK-6)
$\square \quad$ Mathematics Teaching in the Middle School (5-9)
$\square \quad$ Mathematics Teacher (8-14)
\$108 Journal for Research in Mathematics Education
Additional Print Journals:
May be selected to enhance your membership for as little as \$34.
$\square \quad \$ 34$ Teaching Children Mathematics (PreK-6)
ㅁ $\quad \mathbf{\$ 3 4}$ Mathematics Teaching in the Middle School (5-9)
ㅁ $\$ 34$ Mathematics Teacher (8-14)

- $\quad \mathbf{6 1}$ Journal for Research in Mathematics Education


## OPTION 2

## E-Membership

Includes a digital edition, including online archives to one NCTM school journal or the research journal. E-Membership does not include a print journal. Select ONE journal below:

```
$69 \square Teaching Children Mathematics (PreK-6)
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\$94 $\square \quad$ Journal for Research in Mathematics Education

## Additional Online Journals:

May also be included with Option 1. May be selected to enhance your membership for as little as $\$ 20$.

| $\square$ | $\mathbf{\$ 2 2}$ | Teaching Children Mathematics (PreK-6) |
| :--- | :--- | :--- |
| $\square$ | $\mathbf{\$ 2 2}$ | Mathematics Teaching in the Middle School (5-9) |
| $\square$ | $\mathbf{\$ 2 2}$ | Mathematics Teacher (8-14) |
| $\square$ | $\mathbf{\$ 4 7}$ | Journal for Research in Mathematics Education <br> $\square$ |
| $\mathbf{\$ 2 0}$ | Mathematics Teacher Educator (an NCTM/AMTE online <br> journal) |  |

- $\mathbf{\$ 2 2}$ Mathematics Teaching in the Middle School (5-9)
$\square \quad \$ 22$ Mathematics Teacher (8-14)
$\square \quad \$ 47$ Journal for Research in Mathematics Education journal)


## PAYMENT SUMMARY

Membership Dues (Option 1 or 2). . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . \$
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Membership and Additional Journals Total. . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . \$
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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. Note: Multiyear and auto-renew discounts do not apply to foreign postage . . \$
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TOTAL Payment to NCTM in U.S. Dollars . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . $\$$ \$

## METHOD OF PAYMENT

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## Exhibit Hall Floor Plan



## Exhibit Hall Floor Plan



## 0-9

## 3P Learning/Mathletics

Booth: 922
New York, New York
PH: 866-387-9139 FX: 866-387-3220

## www.mathletics.com

Mathletics is a CCSS-, TEKs-, and SOLsaligned $\mathrm{K}-12$ online math resource. Adaptive activities with step-by-step animated support for all concepts and a fun, engaging, realtime multiplayer competition with students around the world, school, and/or class. Easy differentiation and formative assessment reporting for teachers and administrators. Dedicated mobile and tablet apps. Free trial available.

## A

AbleNet Inc.
Booth: 1524
Roseville, Minnesota
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## www.ablenetinc.com

AbleNet is an international company and industry leader in providing educational and technical solutions to help children and adults with disabilities lead productive and fulfilled lives. Curriculum includes Equals Mathematics, Equals Pre-Algebra and PreGeometry, and Focus on STEM.

## Advanced Training and Learning Technology LLC

Booth: 637
Virginia Beach, Virginia
PH: 757 651-4110
www.atltgames.com
Advanced Training and Learning Technology develops 3D math video games for algebra that are more effective at engaging students than Web-based teaching tools. AT\&LT math games can be used for student independent study or classroom augmentation and are one of the most efficient algebra remediation tools currently available.

## ALEKS Corp.

Booth: 1817
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www.aleks.com
ALEKS offers an innovative, online math learning and assessment solution for grades $3-12$. Truly mastery based, ALEKS provides each student with personalized instruction on Ready-to-Learn Topics to quickly fill in knowledge gaps and ensure success in learning new material. ALEKS is correlated to Common Core and state standards.

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American Book Company's books and software are each specially designed to help students prepare and review for unique state exit exams, state assessments, and graduation tests. Free Common Core K-12 books and e-books, ACT, SAT, PLAN, and EXPLORE books available at booth 2116.

## American Statistical Association

 Booth: 231Alexandria, Virginia
PH: 703-684-1221 FX: 703-684-2037

## www.amstat.org/education/

The American Statistical Association (ASA) is a scientific and educational society that works to improve statistical education at all levels. ASA offers outreach activities and resources such as teacher professional development, student competitions, and publications. Stop by the ASA booth to chat with statistics educators and learn about ASA's free K-12 statistics education resources.

## Annenberg Learner

Booth: 1240
Washington, DC
PH: 202-783-0500
www.learner.org
Connect your teaching to the Common Core Practice Standards with Learner Express video modules. Preview the update of the popular statistics course Against All Odds, with shorter videos and a coordinated website. Get video programs on DVD, through digital download, or license for course use. Visit www.learner.org or call 1-800-LEARNER.

## Arcademics.com

Booth: 1724
Lawrence, Kansas
PH: 913-543-1711

## www.arcademics.com

Arcademics' educational video games engage students in learning. Our researchbased and standards-aligned free educational games enable students to learn and have fun through the excitement of multiplayer gaming. Games can improve student performance through increased time on task, engagement, and corrective feedback. Try our games for free at www.arcademics.com.

## Ascend Education <br> Booth: 822 <br> Shreveport, Louisiana <br> PH: 318-865-8232 FX: 318-865-6227 <br> www.ascendmath.com

Ascend Math has proven results that can drive students to achieve up to two gradelevel gains in one school year. This online individualized intervention resource identifies skill gaps, prescribes targeted instruction, and motivates students to achieve their maximum performance.

## Association of Mathematics Teacher Educators

Booth: 1234
San Diego, California
PH: 619-594-3971
www.amte.net
The Association of Mathematics Teacher Educators (AMTE) is the largest professional organization devoted to improving mathematics teacher education. Our members are devoted to enhancing the preservice education and professional development of K-12 teachers of mathematics.

## B

## Bach Company

Booth: 218
Palo Alto, California
PH: 800-248-2224 FX: 650-494-1995
www.bachcompany.com
The Bach Company carries only top-quality products and provides superior customer service. All that and the best pricing available. Product lines include Texas Instruments, Casio, HP, Sharp, Stokes Publishing, Vernier, Top Rhino, and Franklin. Stop by booth 218 and see for yourself.

## Barrett Productions LLC

Booth: 922
Waban, Massachusetts
PH: 617-558-7033 FX: 617-965-0586
www.countingtogether.com
Counting Together: a free app (iPad and iPhone). Develops the essential math skills of addition and subitizing (ability to recognize a certain number of objects without counting). 3-D eye-popping graphics. Automatically changes difficulty as you get better. Up to four players. Endorsed by educational celebrity Bob McGrath.

## BeAnActuary

## Booth: 734

Schaumburg, Illinois
PH: 847-706-3535 FX: 847-706-3599

## www.beanactuary.org

How many times do you answer the question, "What will I ever do with math?" Well, tell them to be an actuary. BeAnActuary. org is the comprehensive website providing information about the actuarial profession. Please visit us at booth 732 to pick up information for your students on building a great career as an actuary.

Bedford, Freeman \& Worth (BFW) Publishers \& W. H. Freeman<br>Booth: 1216<br>Hamilton, New Jersey<br>PH: 866-843-3715 FX: 609-689-9097<br>www.bfwpub.com/highschool/

Bedford, Freeman \& Worth (BFW) Publishers is the most trusted source for innovative high school mathematics resources available in print and digitally. We publish the best-selling books for AP Statistics and AP Calculus and for Common Core State Standards-based Modeling and Statistics and Probability courses. Please stop by booth 1216 in Denver to receive complimentary copies.

## Benjamin Banneker Association <br> Booth: 1238

Richmond, Virginia
PH: 804-519-4879
www.bannekermath.org
The Benjamin Banneker Association is a national nonprofit organization dedicated to mathematics education advocacy, establishing a presence for leadership, and professional development to support teachers in leveling the playing field for mathematics learning of the highest quality for black students.

## Big Brainz

Booth: 1516
Provo, Utah
PH: 877-356-7040 FX: 801-607-6750
www.bigbrainz.com
The average fact fluency scores of 50,000 students who played through Timez Attack were an eye-popping $95 \%$. No budget? No problem. Incredible Base Version is absolutely free. If any students in your district are not fluent, they haven't played through Timez Attack. See the research and download at www.bigbrainz.com/Schools.php.

## Big Ideas Learning LLC

Booth: 1630
Erie, Pennsylvania
PH: 877-552-7766 FX: 888-432-9245
www.bigideasmath.com
Big Ideas Math is the only comprehensive program developed for the Common Core State Standards. Big Ideas Math delivers instruction for all students. By offering two pathways, regular and compacted, the Big Ideas Math program answers the call for focused and coherent content in a middle school math textbook. Embedded Mathematical Practices offer teachers and students a balanced approach of discovery and direct instruction.

## Boardworks Education <br> Booth: 821 <br> New York, New York <br> PH: 855-405-7939 FX: 877-418-7996

## Borenson and Associates Inc.

Booth: 1545
Allentown, Pennsylvania
PH: 800-993-6284 FX: 610-398-7863

## www.borenson.com

Hands-On Equations demystifies the learning of algebra for students in grades 3-8. Empower your teachers by bringing the Making Algebra Child's Play workshop to your district. Visit our website, www.borenson.com, to purchase hands-on materials and interactive whiteboard applications and to register for our free introductory webinars.

## Box Cars and One-Eyed Jacks Booth: 1425 <br> Edmonton, Alberta, Canada <br> PH: 780-440-6284 1-866-342-3386 Toll Free FX: 780-440-1619 <br> www.boxcarsandoneeyedjacks.com

Award-winning math games and resources. The widest selection of dice-choose and customize to your classroom needs. Resources for K-high school. Great professional development offerings.

## Britannica Digital Learning

Booth: 516
Chicago, Illinois
PH: 800-621-3900
info.eb.com/math
Visit booth 516 to see innovative products that meet the Common Core State Standards for Mathematics and feature Britannica quality, including Mathematics in Context (MiC), a modular middle-grades curriculum with print, online, and new interactive digital resources; Keys to Success, a proven summer school program; and SmartMath, an online practice and assessment tool for grades $\mathrm{K}-8$.

## Brookes Publishing Co.

Booth: 1034
Baltimore, Maryland
PH: 410-337-9580 FX: 443-279-0016
www.brookespublishing.com
Trusted resources for professionals working to enhance the abilities and success of all learners-including children with disabili-ties-from the critical early years through adulthood.

## BuzzMath.com

## Booth: 1140

Montreal, Quebec, Canada
PH: 1-888-528-8878, ext. 809

## www.buzzmath.com

BuzzMath is a mathematical mission that leads middle school students to proficiency through supported practice. The studentcentered and user-inspired design makes BuzzMath practical and motivational for students and teachers. With the launch of the new iPad app, students and teachers now have more access than ever to quality math content.

## BYU Math—weusemath.org

Booth: 1045
Provo, Utah
PH: 801-422-8959 FX: 801-422-0504
www.weusemath.org
We Use Math, weusemath.org, is a nonprofit website that helps to answer the question, "When will I use math?" This resource for teachers, students, and parents provides information regarding career opportunities, interesting blogs, free classroom materials, and other pertinent information for those who study mathematics.

## C

## Calculus in Motion

Booth: 1131
Burbank, California
PH: 818-845-6332 FX: 818-845-6332

## www.calculusinmotion.com

We offer two extensive collections (CDs) of interactive computer animations (using The Geometer's Sketchpad v4 or v5) for teaching mathematics. The "Algebra In Motion" CD is for teaching algebra 1 through precalculus. The "Calculus In Motion" CD covers nearly every concept in a first-year calculus course and some beyond.

## Carnegie Learning Inc. <br> Booth: 1820 <br> Pittsburgh, Pennsylvania <br> PH: 888-851-7094 FX: 412-690-2444 <br> www.carnegielearning.com

Carnegie Learning is a leading publisher of innovative, research-based math curricula for middle school, high school, and postsecondary students. Offering differentiated instruction to schools across the United States, Carnegie Learning is helping students succeed in math, creating a gateway to graduation and preparing them for the 21st century.

## Casio America Inc.

Booth: 2121
Dover, New Jersey
PH: 973-361-5400 FX: 973-537-8964
www.casio.com
Casio is a leading producer of graphing, scientific, and basic calculators that are intuitive to use. Casio also provides calculator emulators, print material, and professional development for a total math solution. Our support and training resources are unrivaled and will benefit both teachers and students. Simply calculate the difference: www.casioeducation.com.

## Catchup Math

## Booth: 631

Kensington, California
PH: 206-331-3886 FX: 510-372-6284

## www.catchupmath.com

Catchup Math, a Web-delivered service for secondary students, diagnoses and fills in learning gaps with individualized multimodal instruction. Aligned with the Common Core State Standards, the engaging content covers grade 6 math through algebra 2. Catchup Math is effective for general math review, intervention, and special education and includes detailed progress reports.

## Cengage Learning

Booth: 1530
Mason, Ohio
PH: 800-543-0487

## www.cengage.com

South-Western, Cengage Learning, is a leader in providing lifelong learning products to business educators, individuals, and corporations. Using print, online, and technology solutions, we meet the needs of learners, instructors, and trainers in business, accounting, career readiness, and applied mathematics. Visit us at www.cengage. com/school/.

## Center for Mathematics and Teaching Inc. (CMAT) <br> \section*{Booth: 1818}

Los Angeles, California
PH: 310-310-4948 FX: 310-733-1866
www.mathandteaching.org
CMAT develops Common Core State Standards for Mathematics-aligned materials that target students who struggle with middle school mathematics and provides training and support for their teachers. Come see materials and get samples.

## Classroom Products Warehouse

Booth: 417
Vernon Hills, Illinois
PH: 888-271-8305 FX: 888-280-6110
www.shopcpw.com
CPW offers math and science instructional materials at the guaranteed lowest prices.

## Classroom Professor

## Booth: 2016

Brisbane, QLD, Australia
PH: +61 402503444 FX: +617 32061863

## www.classroomprofessor.com

Looking for interactive teaching and learning tools for elementary math? Classroom Professor Gadgets are tools that support good teaching without getting in your way. Flexible exploration of fractions and number facts is now at your students' fingertips. While you visit, ask about our free weekly worksheets delivered to your inbox.

## Coastline Graphics

## Booth: 1138

Carson, California
PH: 310-830-1190 FX: 310-834-6745

## www.coastlinegraphics.net

Educational and humorous math $t$-shirts.

## College Board

Booth: 1421
New York, NY
PH: 212-713-8331 FX: 212-262-1427

## Common Core Education Inc.

Booth: 1625
Makawao, Hawaii
PH: 808.269.1684 FX: 808.572.2479
www.commoncoreeducation.com
JUMP: Journals for Understanding Mathematical Principles. Formative assessment tools written for Common Core State Standards Mathematics Content Standards and Practice Standards for grades 1-5. Journal prompts require students to demonstrate a deep understanding of concepts at each grade level. Student and teacher friendly; a great addition to any math curriculum.

## Conceptua Math <br> Booth: 823

Petaluma, California
PH: 888-768-MATH (6284)

## www.conceptuamath.com

The Conceptua Math online curriculum for grades $\mathrm{K}-8$ uses interactive visual representations that engage teachers and students in the math curriculum like never before. By "Keeping the Teacher in the Equation," students gain a deeper understanding of mathematical content, acquisition of the Standards for Mathematical Practice, and the opportunity for differentiated instruction.

## CORD Communications

## Booth: 1532

Waco, Texas
PH: 254.776.1822 FX: 254.776.3906
www.cordcommunications.com
CORD Communications specializes in providing context-based math learning tools that enable most students to succeed. Application, activities, and action allow students to achieve deeper understanding and longlasting learning. This is math your students will use-in the classroom, online, and in life. Now compliant with the Common Core State Standards.

## Corwin

Booth: 717
Thousand Oaks, California
PH: 800-233-9936 FX: 800-417-2466
www.corwin.com
Corwin is the premier publisher of professional resources that equip pre-K-12 educators with innovative tools to improve teaching and learning so all children can succeed. Our books and multimedia content offer practical strategies created by experts. Visit www.corwin.com for resources on language development, literacy, equity, leadership, math, and science.

## CPM Educational Program <br> Booth: 724

Sacramento, California
PH: 209-745-2055 FX: 209-745-7655

## www.cpm.org

This comprehensive, standards-based math program for grades 6-12 uses problem-based learning in student-centered classrooms and is supported with funded professional development. CPM courses meet the content and practices of the Common Core State Standards.

## D

## D\&H Distributing Company

## Booth: 225

Harrisburg, Pennsylvania
PH: 800-340-1006 FX: 717-255-6750

## www.buycalcs.com

D\&H is the country's largest distributor of calculators to school districts, with knowledgeable staff, competitive pricing, and four warehouses for fast delivery.

## Damand Promotions

Booth: 1644
Poway, California
PH: 858-663-5129

## www.damand.com

The Parent's Homework Dictionary will empower your parents to help reinforce math skills at home. Written in 10 languages, this book is for all learning levels and has thousands of free worksheets for summer reinforcement.

## Delta Education Math

Booth: 1540
Nashua, New Hampshire
PH: 800.237.8412 FX: 888-323-4251

## www.deltaeducation.com

Do you need Common Core State Standards resources? We offer educators the solutions, programs, and products they need to provide students with a deep understanding of math. From preschool to grade 6, our tools help students connect, comprehend, apply, and achieve.

## Desmos Inc.

Booth: 916
San Francisco, California
PH: 415-484-5342 FX: 415-534-0941

## www.desmos.com

At Desmos, we believe in learning by doing.
We designed our free graphing calculator with that in mind. Built to work on any device, our calculator reveals the beauty of math with adjustable parameters, vivid colors, and one-click sharing. With Desmos, everyone can create and experience math like never before.

## Didax

Booth: 1839
Rowley, Massachusetts
PH: 800-458-0024 FX: 800-350-2345

## www.didax.com

Didax publishes supplemental resources for pre-K-grade 12, including books, games, interactive resources, manipulatives, and more. We also partner with Math Perspectives to distribute Kathy Richardson's assessment and curriculum materials. Our materials give teachers innovative, hands-on ways to help students achieve the goals of the Common Core State Standards.

## Digi-Block

Booth: 532
Cambridge, Massachusetts
PH: 888-834-4466 FX: 617-661-3310
www.digi-block.com
The Digi-Block method uses an innovative physical model of our number system to teach place value, number sense, operations, and decimals. Inquiry-based activities facilitate students' discovery of mathematical properties. This proven method is fully aligned with the Common Core State Standards. Stop by the booth for a hands-on demo.

## Dinah-Might Adventures

Booth: 939
San Antonio, Texas
PH: 800-993-4624 FX: 210-698-0095

## www.dinah.com

Dinah-Might Adventures is an educational publishing and consulting company owned by Dinah Zike. Her books are known for their innovative ways to use Foldables in teaching all subjects and grade levels. She also offers professional development at the Dinah Zike Academy, a unique trainer-oftrainers facility.

## DreamBox Learning

Booth: 1222
Bellevue, Washington
PH: 425-637-8900 FX: 425-484-6476

## www.dreambox.com

DreamBox Learning combines rigorous elementary mathematics aligned with the Common Core State Standards with a motivating learning environment and the revolutionary DreamBox Intelligent Adaptive Learning platform. This innovative technology dynamically adapts and individualizes mathematics instruction in real time. As a result, students master key concepts, increase achievement, and experience long-lasting confidence.

## E

## EAI Education

Booth: 2017
Oakland, New Jersey
PH: 800-770-8010 FX: 201-891-5689
www.eaieducation.com
EAI's product line includes a full line of math manipulatives, resource books, trade books, interactive whiteboard software, games, puzzles, and calculators for all grade levels. EAI proprietary products include SmartPal sleeves and guidebooks, QuietShape manipulatives, Katie Kubes, Flip Charts, Money Activity Centers, Slide N' Measure compasses, X-Y Coordinate Geoboards, GeoModel folding shapes, and "I Have, Who Has?" games-plus many others.

## Edorphins Educational Materials

 Co.Booth: 1536
Anchorage, Alaska
PH: 907.748.0268
www.edorphins.com
Edorphins is an innovative new educational materials company. We produce easy-touse, functional materials that are classroom tested. In Denver we're featuring our first product: Equalities. Equalities is a math game played on interactive whiteboards. Students enjoy playing it while reviewing your choice of math facts from multiplication through trig.

## Educators Outlet Inc.

Booth: 339
Timnath, Colorado
PH: 800-315-2212 FX: 866-254-5786

## www.educatorsoutlet.com

Educators Outlet is your best resource for math manipulatives, teacher resource and literature books, classroom resources, and math and language arts games. Let our professional customer service agents help you with your educational and classroom needs.

## ETA hand2mind

## Booth: 1645

Vernon Hills, Illinois
PH: 800-445-5985

## www.hand2mind.com

The mission of ETA hand2mind is to support pre-K-12 educators through its quest to inspire and champion learning by doing with research-based, hands-on solutions. The company's innovations in mathematics, science, and literacy provide instructional curriculum, custom-kit options for content providers, manipulatives, interactive digital applications, and teacher coaching and development.

## Exemplars

Booth: 630
Underhill, Vermont
PH: 800-450-4050 FX: 802-899-4825

## www.exemplars.com

Exemplars publishes performance tasks for instruction and assessment. Our real-world problem-solving tasks are designed to engage students. Material is differentiated at three levels. Tasks support Common Core State Standards for Mathematics (CCSSM) and include alignments with CCSSM,
NCTM, and state standards. Rubrics and annotated anchor papers are provided.

## ExploreLearning

## Booth: 1823

Charlottesville, Virginia
PH: 866-882-4141 FX: 877-829-3039
www.explorelearning.com
ExploreLearning develops online solutions to improve student learning in math and science. ExploreLearning Gizmos are the world's largest library of interactive, online simulations for math and science in grades 3-12. ExploreLearning Reflex (www.reflexmath.com) is the most powerful solution available for math fact fluency.

## Eye On Education

Booth: 1544
Larchmont, New York
PH: 888-299-5350 FX: 914-833-0761

## www.eyeoneducation.com

Eye On Education publishes practical reference books for teachers, principals, administrators, and other educators. Visit our booth to browse select titles, including new publications Guided Math in Action and Strategies for Common Core Mathematics K-12 series. Attendees enjoy $20 \%$ and free shipping on all Eye On Education titles.

## F

## FACEing MATH

## Booth: 1520

Hemet, California
PH: 951-492-8341 FX: 815-301-3070

## www.faceingmath.com/

We sell standards-based supplementary math workbooks that are a unique blend of math and art. Our books are written by classroom teachers and range from first grade through high school algebra 2.

## First In Math—Suntex International

 Booth: 531Easton, Pennsylvania
PH: 610-253-5255 FX: 610-258-2180

## www.firstinmath.com

Revolutionize the way your students practice. Visit our booth to see how First In Math Online provides your students with the deep practice and immediate feedback necessary for skill acquisition. The program includes an interactive Common Core State Standards alignment feature, rigorous test prep, and comprehensive, easy-to-read assessment tools.

## Flashmaster LLC

Booth: 1044
Jackson, Wyoming
PH: 800-884-3531 FX: 888-493-4320

## www.flashmaster.com

FlashMaster: fun 11-ounce handheld electronic learning aid with large LCD for mastering math facts: addition, subtraction, multiplication, and division. Kids regard it as a GameBoy, but it is a little computer for practicing basic math facts. Teachers can review detailed results of students' extensive practice long after performed.

## Flip Flop Math

Booth: 937
Thornton, Colorado
PH: 303-596-5665 FX: 303-955-7021

## www.flipflopmath.com

Flip Flop Math creates research- and stan-dards-based math materials that help build a strong numeracy foundation for students. We are committed to making teachers' lives easier by providing versatile and easy-to-use materials to differentiate instruction and practice.

## Forefront Math Corporation

Booth: 721
Lafayette, Colorado
PH: 720-771-8345
www.forefrontmath.com
Software solutions for assessment data and content management. Powerful, cuttingedge, cross-platform products to monitor the impact of instruction. Dynamic reporting tools inform instruction, response to intervention, and bring student growth into focus. Research-based K-5 assessments aligned with learning trajectories. At Forefront Math we're building the future of assessment.

## Frog Publications <br> Booth: 824 <br> San Antonio, Florida <br> PH: 800-777-3764 FX: 352-588-0863 <br> www.frog.com

Watch your students love to learn with systematic reinforcement programs; individualized educational plans; response to intervention; differentiated instruction; terrific, ready-to-use learning centers; take-home parental involvement program; daily review; critical thinking; and dual language. All Frog games use the same easy-to-learn rules. Students needing different levels or skills can practice together.

## G

## GeoGebra Inc.

## Booth: 1433

Fort Lauderdale, Florida
PH: +36(70)7730634
www.geogebra.org
GeoGebra is free and multiplatform dynamic mathematics software for all levels of education that joins geometry, algebra, tables, graphing, statistics, and calculus in one easy-to-use package. It has received several educational software awards in Europe and the United States.

## Greenville College

Booth: 1133
Greenville, Illinois
PH: 800.345.4440 FX: 618.664.2800

## www.greenville.edu

Greenville College is an accredited liberal arts college providing undergraduate and graduate education since 1892 . We offer online MAE programs in a variety of disciplines including coaching, curriculum and instruction, ESL, and literacy. We also offer grade-specific modules to help prepare teachers for the Common Core State Standards.

## H

## Haese Mathematics

## Booth: 624

Adelaide, South Australia
PH: +61 882104666 FX: +61 883541238
www.haesemathematics.com.au
We are a specialist publisher of math textbooks and software for schools, mainly for schools that offer the International Baccalaureate (IB) Diploma and Middle Years Programs. Our books are noted for their student-friendly approach and purpose-built interactive software, provided on CD with every textbook.

## Heinemann

Booth: 1437
Portsmouth, New Hampshire
PH: 603-431-7894 FX: 603-431-7840

## www.heinemann.com

Heinemann has been the leading name in professional development books and resources for nearly 35 years. With nationally known authors and transformative resources in all content areas, including math and science, Heinemann is dedicated to making good teaching accessible to all.

## Hooda Math

Booth: 1538
Minneapolis, Minnesota
http://hoodamath.com
Free online math site for students of all ages featuring more than 250 math games and more than 20 iPad Apps for only $\$ 0.49$ each with educational discount. Created by a middle school mathematics teacher in 2008. More than 2 million students are playing at hoodamath.com every month.

## Houghton Mifflin Harcourt

Booth: 1517
Boston, Massachusetts
PH: 800-255-5425 FX: 800-269-5232
www.hmheducation.com
Houghton Mifflin Harcourt is a global learning company committed to changing lives by fostering passionate, curious learners. Among the world's largest providers of pre-$\mathrm{K}-12$ education solutions and one of the its longest-established publishing houses, HMH combines cutting-edge research, editorial excellence, and technological innovation to improve teaching and learning environments and solve complex literacy and education challenges.

## howthemarketworks.com

Booth: 719
Hilton Head, South Carolina
PH: 770-337-7720

## www.howthemarketworks.com

How the Market Works (howthemarketworks.com) is the most popular free stock market game website that allows teachers to create a custom stock market contest for their class. The site offers many educational materials, a glossary, and a teacher resource area with lesson plans for math teachers. Used by more than 200,000 students each year.

## HP

Booth: 1639
Palo Alto, California
PH: 1-888-999-4747
www.hp.com/calculators/
Revolutionize your classroom with graphing tools that bring mathematics to life and educational technologies that engage students in participatory learning. Visit HP at booth 1639 to experience the unveiling of our new products.

## I

## It's About Time <br> Booth: 325

Mt. Kisco, New York
PH: 914-273-2233 FX: 914-206-6444

## www.iat.com

It's About Time is a leading educational publisher of middle and high school inquirybased science and math programs supported by the National Science Foundation. Our challenge-driven programs increase student achievement because they motivate and engage, develop critical thinking, and give students the skills to work collaboratively and the ability to apply what they have learned.

## IXL Learning

Booth: 1417
San Mateo, California
PH: 855.255.8800 FX: 650.372.4301

## www.ixl.com

IXL is a math practice website completely aligned with all state standards and the Common Core State Standards. IXL offers unlimited questions in pre-K-high school math in a fun, visually stimulating format that students love. Plus, teachers can view detailed reports on students' progress and trouble spots-including complete question histories for individuals.

## J

## Johnny's Key

Booth: 1431
Trevorton, Pennsylvania
PH: 570-809-2840
www.johnnyskey.com
Grades 2-4 teachers: kids not getting elapsed time? Fret no more; it's what we do best. Meet us at Way-2-EZ-Street to experience the new manipulative that models elapsed time, making change, subtraction with regrouping, ordering of numbers, decimals, fractions, and more. So EZ.

## JUMP Math

Booth: 633
Toronto, Ontario, Canada
PH: 510-677-0001
www.jumpmath.org
JUMP Math is a nonprofit organization dedicated to closing the math achievement gap in grades $1-8$ students. Through its classroom curriculum (which is being carefully rewritten to adhere to the Common Core State Standards), JUMP helps teachers guide discovery in their students, which leads to deeper problem-solving skills.

## K

## Kendall Hunt

Booth: 1731
Dubuque, lowa
PH: 800.542.6657
www.kendallhunt.com/prek12/
Kendall Hunt provides a complete, Common Core State Standards-aligned pre-K-12 mathematics solution. Our curriculum emphasizes mathematical practice standards, builds students' critical thinking and procedural skills, and promotes conceptual understanding. Available in digital and print formats, our programs also support educators with ongoing professional development that ensures effective implementation and elevates classroom achievement.

## KnowRe

Booth: 638
New York, New York
PH: 917-580-2246 FX: 866-249-5848

## www.knowre.com

KnowRe is an educational technology company focused on providing a personalized learning experience for each student through a digital adaptive-learning solution. KnowRe's engine provides the most accurate assessment of a student's strengths and weaknesses and offers a personalized curriculum tailored to each individual's learning needs, all in an engaging user experience.

## L

## Lakeshore Learning Materials

## Booth: 1631

Carson, California
PH: 800-421-5354 FX: 310-632-8314
www.lakeshorelearning.com
Lakeshore Learning Materials is one of the leading manufacturers of K-6 math products-including exclusive materials that target Common Core State Standards. From interactive software to hands-on tools that reinforce essential skills, our wide range of products support intervention strategies, help educators teach real-world math applications and more.

## The Learning Carpet-TLC Inc.

## Booth: 623

Hunstville, Ontario
PH: 705-783-2396 FX: 705-789-8016
www.thelearningcarpet.com
The Learning Carpet is a large gridded 100 -square carpet on which children walk and place corresponding number cards to develop a strong sense of number. Many other concepts are addressed though the use of pattern cards, a mapping kit, clock hands, symmetry lines, and alphabet cards.

## Learning Upgrade LLC

Booth: 1525
Escondido, California
PH: 800-998-8864 FX: 858-653-4677

## www.learningupgrade.com

Learning Upgrade publishes the Algebra Upgrade and Math Upgrade online courses featuring songs, video, and games. Transform your classes with interactive lectures using projectors and interactive whiteboards. Bring the whole school up to proficiency with high-interest online student courses.

## Learning Wrap-ups Inc.

## Booth: 1932

Layton, Utah
PH: 800-992-4966 FX: 801-497-0050

## www.learningwrapups.com

Learning Wrap-ups is a supplemental publisher of Learning Wrap-ups, which is designed to build fact fluency and develop automaticity of basic math skills. It also features the Learning Palette, which creates standard-based learning centers. All products have been correlated to the Common Core State Standards, with correlation documents available with all kits.

## Lone Star Learning

Booth: 736
Lubbock, Texas
PH: 806-281-1424 FX: 806-281-1407
www.store.lonestarlearning.com
Lone Star Learning is a teacher-owned curriculum development company offering unique and easy-to-use visuals and interactive bulletin boards that give students specific practice needed to achieve mastery in math, science, and language arts. We strive to decrease teacher effort while increasing student success with our innovative products.

## M

## Magformers (sold by NCL Corp.)

 Booth: 1522Salt Lake City, Utah
PH: 801-558-9526 FX: 801-272-0846
wwwl.nclmagneticshapes.com
Magnetic Math: Powerful neodymium magnets encapsulated within every side of rainbow-colored squares, triangles, pentagons, hexagons, octagons, and rhombi. All magnets rotate to always connect. Shapes can be used in the classroom to build geometric shapes demonstrating spatial relationships and to visualize surface area, vertices, and volume.

## Making Math (a division of O'Reilly Media)

Booth: 918
Champaign, Illinois
PH: 217-898-5088 FX: 217-352-0263
www.makingmath.com
Making Math is a new math teaching platform using modern Web-based technologies for better delivery and learning outcomes.
The courses are structured around the constructionist method, in which instructors guide students to explore interactive lessons and create solutions that are graded through formative assessment.

The Markerboard People<br>Booth: 1723<br>Lansing, Missouri<br>PH: 800-379-3727 FX: 888-379-3727<br>www.dryerase.com

Student dry-erase markerboards and response boards in class sets. Great for instant response and instant assessment. Unbeatable prices. Single- and double-sided available. Perfect for language arts, graphing, handwriting, math, science, and more. Long-lasting, nontoxic, ultra-low-odor markers too.

## Marshall Cavendish Education <br> Booth: 2130

Tarrytown, New York
PH: 914-332-8888 FX: 914-332-1082

## us.marshallcavendish.com

Marshall Cavendish Education is the leading $\mathrm{K}-12$ educational publisher with more than 40 years of publishing experience. It is the preferred copublisher of the Ministry of Education, Singapore, with the most approved textbooks. Globally, we have extended our reach to teachers and learners in more than 50 countries across six continents.

## Maryland Public Television/ Mathlanding

## Booth: 740

Owings Mills, Maryland
PH: 410-581-4042 FX: 410-581-0980

## www.mathlanding.org

Discover Mathlanding: Resources and Tools for Elementary Math Specialists and Teachers. Mathlanding harnesses the best free resources on the Web for classroom and professional development. Among the resources are videos, interactives, lessons, and journal articles-more than 1200 carefully vetted resources, made easily searchable and aligned with the Common Core State Standards and NCTM standards.

## Math for America <br> Booth: 632

New York, New York
PH: 646-437-0912 FX: 646-437-0935

## www.mathforamerica.org

Math for America is a nonprofit organization with a mission to improve mathematics and science education in U.S. public secondary schools by building a corps of outstanding STEM teachers and leaders.

## The Math Forum @ Drexel

## Booth: 741

Philadelphia, Pennsylvania
PH: 215-895-1080 FX: 215-895-2964

## www.mathforum.org

and goodwin.drexel.edu/mlt
For more than 20 years, the Math Forum at Drexel University has been committed to improving mathematics education. Come visit with Math Forum staff, Mathematics Education faculty, and our community members to learn more about new projects we're launching, our ongoing services, professional development, and our certificate and graduate programs.

## The Math Learning Center

Booth: 522
Salem, Oregon
PH: 800-575-8130 FX: 503-370-7961

## www.mathlearningcenter.org

The Math Learning Center is a nonprofit organization serving the education community. Our mission is to inspire and enable individuals to discover and develop their mathematical confidence and ability. We offer innovative and standards-based curriculum, resources, and professional development.

## Math Recovery and <br> Add+VantageMR

Booth: 1040
Brentwood, Tennessee
PH: 615-369-0700 FX: 615-369-0701

## www.mathrecovery.org

Math Recovery and Add+VantageMR professional development programs provide a powerful mathematics intervention framework that gives teachers the unique techniques and assessment tools they need to help elementary children achieve lifetime results. These programs complement a wide variety of curricula and are effective in individual, small-group, and classroom settings.

## Math Solutions

Booth: 1031
Sausalito, California
PH: 800.868.9092 FX: 877.942.8837

## www.mathsolutions.com

Math Solutions, founded by Marilyn Burns, has been transforming instruction for almost 30 years by providing the highest quality professional development, coaching, and resources. We partner with schools and districts nationwide to provide accelerated, sustainable improvement in mathematics instruction, student proficiency, and transitioning to the Common Core State Standards.

## Math Teachers Press Inc.

Booth: 1917
Minneapolis, Minnesota
PH: 800.852.2435 FX: 952.546.7502
www.movingwithmath.com
The Moving with Math Pre-K-12 intervention math programs are research based, integrating manipulatives, problem solving, and games with scripted lesson plans. Built-in assessment monitors achievement, measures progress, and differentiates instruction for response to intervention. Results are science based. Web-based technology and professional development are available. Programs meet the needs of special education.

## MATHCOUNTS Foundation

Booth: 518
Alexandria, Virginia
PH: 703-299-9006 FX: 703-299-5009
www.mathcounts.org
MATHCOUNTS is a nationwide program that provides fun and challenging extracurricular math programs for grades 6-8 students. Stop by the booth to receive free materials and to learn about our club, competition, and online programs.

## Mathematical Olympiads for Elementary and Middle Schools Booth: 841 <br> Bellmore, New York <br> PH: 516-781-2400 FX: 516-785-6640 <br> www.moems.org

Math Olympiads is a nonprofit corporation dedicated to stimulating enthusiasm, fostering creativity, and strengthening intuition in mathematical problem solving. Through the use of five monthly contests, teachers and teams of up to 35 students explore and review mathematical concepts while developing flexibility in solving nonroutine problems. Certificates, medals, or trophies are awarded to all participants. Visit our booth for information, sample problems, and prizes.

## MathFactsPro.com

## Booth: 920

Wichita, Kansas
PH: 316-665-1630

## www.mathfactspro.com

One dollar per student; see our coupon. Smart online fluency game with mnemonic videos. (Look for us across from Scholastic.)

## Mathletics

Booth: 924
New York, New York
PH: 866-387-9139 FX: 866-387-3220

## MathLine at Howbrite Solutions

## Booth: 1230

Cokato, Minnesota
PH: 800-505-MATH FX: 320-286-6338

## www.howbrite.com

MathLine blends a unique hands-on tool with a new interactive whiteboard teaching tool for $\mathrm{K}-5$ math, creating the perfect balance between high-tech and hands-on strategies. MathLine is an effective multisensory supplemental for enriching your curriculum and response to intervention while meeting Common Core State Standards objectives. Perfect for executing the Standards for Mathematical Practice.

## MathOdes Company

Booth: 520
Festus, Missouri

## www.mathodes.com

MathOdes is a math teaching and study aid designed to help students remember math concepts and formulas in the form of poetry and music. Each "ode" details a particular math concept such as logarithmic functions, linear equations, and surface area. Music CDs, DVDs, and color illustrated poetry books are currently available for algebra 1 , algebra 2, and geometry.
math-science-tees.com
Booth: 1824
Corinth, Texas
PH: 940-390-1254 FX: 940-891-4021
www.math-science-tees.com
Funny and inspiring math and science tshirts. We have bling.

## Math-U-See

## Booth: 1925

Fallbrook, California
PH: 800-454-6284 FX: 760-451-0096
www.mathusee.com/schools
Math-U-See, K-12 Research-Based Core Replacement Curriculum for Special Education and response to intervention Tier 3, uses explicit instruction, systematic approach, cumulative review, structured procedures, multisensory methods, short-cycle assessment, and progress monitoring. It meets/ exceeds What Works Clearinghouse Practice Guide on Assisting Students Struggling in Math. Sample Integer Blocks at booth 1925.

## McGraw-Hill Education

## Booth: 731

Columbus, Ohio
PH: 800-334-7344 FX: 614-860-1877

## www.mheonline.com

Whatever your math problem, McGraw-Hill
Education has the solution. McGraw-Hill Education provides Common Core State Standards-aligned pre-K-12 math curricula designed to support every classroom. Our innovative programs include Everyday Mathematics, The Geometer's Sketchpad, Tinker Plots, Number Worlds, Glencoe Math, and CINCH Learning. McGraw-Hill Education has the solution to your math problems.

## Michigan State University

Booth: 738
East Lansing, Michigan
PH: 517-355-1708 FX: 517-432-9868
prime.msu.edu
The doctoral program in mathematics education is designed for persons who show promise of becoming leaders in local, state, national, and international mathematics education communities. We prepare researchers and leaders to address critical mathematics education issues by developing analytical perspectives for research, engaging in reflective teaching, and deepening mathematical knowledge.

MIND Research Institute<br>Booth: 331<br>Irvine, California<br>PH: 888-715-5443 FX: 949-572-2678<br>www.mindresearch.net

The MIND Research Institute is a neurosci-ence- and education research-based nonprofit. MIND applies its distinctive visual approach to illustrating math concepts and building problem-solving skills as the basis for innovative, research-proven math education programs for elementary and secondary schools. MIND is committed to helping all children achieve success in school and life. MIND's ST (Spatial Temporal) Math programs currently reach 475,000 students and 16,000 teachers in 1,375 schools in 26 states. For more information, visit www. mindresearch.net.

## Minitab

Booth: 725
State College, Pennsylvania
PH: 814-238-3280

## www.minitab.com

Minitab 16 is the leading software for statistics education worldwide and can be purchased via affordable semester rentals. It provides a comprehensive set of tools and powerful graphics capabilities for stunning and informative graphs. More than 4,000 colleges and universities trust Minitab for education. Visit www.minitab.com/academic/.

## MobiusMath Corporation

Booth: 1835
Binghamton, New York
PH: 888-849-0774 FX: 607-238-7213
www.mobiusmath.com
MobiusMath provides both printable and online interactive workbooks focused on the Common Core State Standards for Mathematics.

## Mountain Math/Language LLC Booth: 1533

Ogden, Utah
PH: 801-475-1995 FX: 801-475-1995

## www.mtmath.com

Supplier of supplemental spiral review programs for math, language, science, and U.S. history. Available as bulletin boards, centers, games, or an online program.

Mu Alpha Theta<br>Booth: 1032<br>Norman, Oklahoma<br>PH: 405-325-4489 FX: 405-325-7184

## www.mualphatheta.org

Mu Alpha Theta, the national high school and two-year college mathematics honor society, is an association of math clubs with more than 1980 chapters in the United States and 14 foreign countries. We provide honor cords, merchandise, scholarships, grants, financial awards, free math competitions at your school, and online mathematics resources.

## N

Nasco

## Booth: 431

## Fort Atkinson, Wisconsin

PH: 800-558-9595 FX: 800-372-1236

## www.enasco.com

Nasco is proud to supply innovative teaching methods, hands-on manipulatives, interactive whiteboard materials, and real-life problem-solving projects for elementary, middle school, and secondary math programs. We have products for the Common Core State Standards and STEM initiatives. Nasco can also provide custom kits to meet the individual needs of educators.

## National Assessment of Educational Progress

Booth: 625
Washington, DC
PH: 202-842-3600

## www.nationsreportcard.gov

The National Assessment of Educational Progress is the largest continuing and nationally representative assessment of what U.S. students know and can do.

## National Council of Supervisors of Mathematics

Booth: 1137
Denver, Colorado
PH: 303-758-9611 FX: 303-758-9616

## National Science Foundation

## Booth: 534

Arlington, Virginia
PH: 703-292-5121 FX: 703-292-9179

## www.nsf.gov

To familiarize NCTM members and guests with the White House program, Presidential Awards for Excellence in Mathematics and Science Teaching, a booth sponsored by the National Science Foundation (NSF), will be staffed by previous presidential awardees and an NSF official. Learn more about this most prestigious of national teacher award activities. Booth staff will have materials describing the award and how you can nominate an outstanding mathematics or science teacher for the 2014 competition round. Begun in 1993, and administered by the NSF on behalf of the White House, more than 4,200 mathematics and science teachers have received this award. Awardees travel to Washington to meet with the president and receive a White House certificate and $\$ 10,000$ award.

## Neufeld Learning Systems Inc. <br> Booth: 2024

London, Ontario, Canada
PH: 1-866-429-6284 FX: 519-675-3220

## www.neufeldlearning.com

Neufeld Learning Systems provides browserbased technology solutions and customized professional development for reaching all learners of mathematics. UMath X goes deep to address Common Core State Standards content with diagnostic tests for grade 3 to algebra 1 , providing timely information on student progress, and allowing instruction to be tailored to individual needs.

## NewPath Learning

Booth: 424
Victor, New York
PH: 800-507-0966 FX: 800-507-0967

## www.newpathlearning.com

NewPath Learning's Curriculum Mastery Games, Flip Charts, Interactive Whiteboard Software, Visual Learning Guides, and Study Cards provide comprehensive coverage of the current national and state standards for Math, Science, Language Arts, and Social Studies for grades K-high school. The company's products are supplemented with Web-based activities at www.newpathlearning.com.

New York Times<br>Booth: 2039<br>www.nytimes.com

Visit the New York Times booth for reduced home delivery and receive a gift with subscription. Distributed internationally, the New York Times is the largest metropolitan newspaper in the United States. Although nicknamed the "Gray Lady" for its staid appearance and style, it is frequently relied on as the official and authoritative reference for modern events.

## North American Study Group on Ethnomathematics <br> Booth: 1236

Salt Lake City, Utah
PH: 801-455-5582
nasgem.rpi.edu
The North American Study Group on Ethnomathematics strives to increase teachers' understanding of the role of diversity and culture in the teaching and learning of mathematics so that all students have optimal opportunities to succeed.

## Norwood House Press <br> Booth: 933

Chicago, Illinois
PH: 773-467-0837 FX: 773-467-9686
www.norwoodhousepress.com
Norwood House Press is an educational children's publishing company specializing in supplemental math and science material. Stop by booth 933 and see our new iMath series developed to align specifically with the Common Core State Standards for Mathematics.

## NROC

Booth: 935
Marina, California

## www.nrocmath.org

NROC is a nonprofit, member-driven project focused on new models of digital content development, distribution, and use. Our collaborative efforts bring open resources for personalized learning to the world. NROC is sustained by institutional members of the NROC Network, a community committed to improving access to high-quality education for all.

## 0

## ORIGO Education

## Booth: 1931

St. Charles, Missouri
PH: 888-674-4601 FX: 888-674-4604

## www.origoeducation.com

ORIGO Education is committed to excellence and strives to create resources that inspire and empower both teachers and students. ORIGO's new Web-based curriculum, Stepping Stones, is written for the Common Core State Standards. This world-class mathematics program seamlessly blends digital and print resources with embedded professional development to develop a deep understanding.

## P

Pearson
Booth: 234
Upper Saddle River, New Jersey www.pearsoned.com
Pearson is serious about evolving how the world learns. We apply our deep education experience and research, invest in innovative technologies, and promote collaboration throughout the education ecosystem. Real change is our commitment, and its results are delivered through connecting capabilities to create actionable, scalable solutions that improve access, affordability, and achievement. For more information, visit www. pearsoned.com.

## Perfection Learning <br> Booth: 1030

Logan, lowa
PH: 800-831-4190 FX: 800-543-2745
www.perfectionlearning.com
Perfection Learning is a leading publisher of traditional and online math curriculum materials. Our Kinetic Math programcomprehensive, interactive digital math textbooks designed for the Common Core State Standards-engages students with hundreds of activities and whiteboards, thousands of interactive problems, audio, video lectures, built-in scoring, and more.

## PhET Interactive Simulations

## Booth: 730

Boulder, Colorado
PH: 303-492-6963 FX: 303-492-3352
phet.colorado.edu
The PhET Interactive Simulations Project has developed more than 100 free simulations for teaching and learning science and math (http://phet.colorado.edu). Simulations such as Circuit Construction Kit create interactive, gamelike environments that encourage scientist-like exploration. They emphasize the connections to real life, make the invisible visible (e.g., electrons), and include expert visual models.

## Presidential Awards for

 Excellence in Mathematics and Science Teaching
## Booth: 534

www.paemst.org
The Presidential Awards for Excellence in Mathematics and Science Teaching (PAEMST) are the nation's highest honors for $\mathrm{K}-12$ teachers of mathematics and science (including computer science). PAEMST awardees serve as models for their colleagues, inspiration to their communities, and leaders in the improvement of mathematics and science education. Since 1983, more than 4,200 teachers have been recognized for their contributions in the classroom and to their profession. If you know great teachers, nominate them to join this prestigious network of professionals.

## Q

## Queue Inc.

## Booth: 1531

Stratford, Connecticut
PH: 800-232-2224 FX: 800-775-2729

## www.qworkbooks.com

Queue publishes state-specific, standardsaligned materials as well as Common Core-aligned materials. Products include traditional print workbooks, an interactive whiteboard, and online materials.

## Qwizdom Inc.

Booth: 931
Puyallup, Washington
PH: 253-845-7738 FX: 253-845-1909

## www.qwizdom.com

Qwizdom accelerates and improves learning outcomes with award-winning curriculum aligned with Common Core and state standards. District-wide reporting gives you instant, precise data at all levels. Our solutions are easy to use and create a Rapid Learning Environment that can be implemented regardless of your technology landscape.

## R

## Renaissance Learning

Booth: 517
Wisconsin Rapids, Wisconsin
PH: 715-424-3636 FX: 715-424-4242

## www.renlearn.com

Daily and periodic progress-monitoring assessments for math give teachers vital information about each student's math skill development by combining Renaissance Learning software, such as Accelerated Math, MathFacts in a Flash, and STAR Math, with classroom-proven best-teaching practices. The result: dramatically improved math skills for every grades $1-12$ student.

## Rhymes ' $n$ ' Times

Booth: 1721
Lewisville, Texas
PH: 888-684-6376 FX: 888-684-6177

## www.rhymesntimes.com

Common Core State Standards times tables in only 3 weeks-guaranteed. If class average isn't $90 \%$ on final test, $100 \%$ refund. Research-based, multisensory approach meets all students' needs. Optimized for response to intervention. No training. See Fishin' for Addition, Subtraction in Action, Divide 'n' Slide, ClockWise Fractions, and Equivalency. See 3-minute videos: www. rhymesntimes.com and www.clockwisemath.com.

## Rosen Classroom

Booth: 2118
New York, New York
PH: 800-237-9932 FX: 888-436-4643
www.rosenclassroom.com
Rosen Classroom's unique interdisciplinary approach connects math skills directly to science and social studies content areas. Our Common Core State Standards-aligned leveled readers for math are ideal for wholeclass and small-group instruction. Teacher's guides support explicit math instruction, connections to science and social studies content, and reinforcement of academic vocabulary.

## S

## Saltire Software

Booth: 330
Tigard, Oregon
PH: 503-968-6251, ext. 102 FX: 503-968-1282 www.saltire.com, www.mathillustrations.com, www.geometryexpressions.com
Saltire Software is the maker of Math Illustrations, the math teacher's invaluable tool for quickly creating accurate, to-scale drawings for worksheets, tests, and presentations, and Geometry Expressions, the symbolic geometry modeling program that lets students investigate problems with numeric and symbolic representations. Available curriculum materials range from algebra through calculus.

## SAT Subject Tests

Booth: 1534
www.satsubjecttests.org/teachers/
The SAT subject tests in math can help your students stand out on their college applications. Stop by booth 1534 to get a free teacher's Guide to the SAT subject tests in math. Visit www.satsubjecttests.org/teachers/ to learn more.

## Scholastic Inc.

## Booth: 917

New York, New York
PH: 212-343-6100 FX: 212-343-7759

## www.scholastic.com

Scholastic is the world's largest publisher and distributor of children's books and is a leader in educational technology. The company creates quality books, print- and technologybased learning materials and programs, classroom magazines, multimedia, and other products that support teachers and help children learn both at school and at home.

## Shell Education

Booth: 1125
Huntington Beach, California
PH: 877-777-3450 FX: 888-877-7606

## www.shelleducation.com

Shell Education develops supplemental educational resources that are research based and correlated to the Common Core State Standards, the standards of all 50 states, and those of the Canadian provinces. By working closely with teachers to develop top-quality resources, Shell provides practical, class-room-tested ideas and professional development resources for educators and administrators around the globe.

## Singapore Math

Booth: 2031
Oregon City, Oregon
PH: 888-419-4408 FX: 503-557-8103

## www.singaporemath.com

Singapore Math is dedicated to bringing the highest-quality educational resources to the United States and Canada. Please come by our booth or attend our exhibitor workshop (Saturday, 10:00 a.m. in room 301) that will explore the success one district found in implementing our Singapore Math programs.

## St. Jude Children's Research Hospital Math-a-Thon

Booth: 1640
Memphis, Tennessee
PH: 800-386-2665

## www.mathathon.org

St. Jude Math-a-Thon is America's largest education-based fundraiser for grades $\mathrm{K}-8$. The program is designed to complement your existing math curriculum while teaching students the importance of helping others. Our curriculum, created by Scholastic, meets national standard requirements useful to practice and prepare for standardized testing.

## Staff Development for Educators

Booth: 817
Peterborough, New Hampshire
PH: 800-462-1478 FX: 800-337-9929
www.sde.com
Staff Development for Educators offers professional development in Singapore Math, Common Core State Standards for Mathematics, Differentiated Math, Math Interventions, and more. Our Singapore Math Convention in July in Las Vegas is attended by more than 1500 math educators from all over the world. Visit www.sde.com/ singapore-math/.

## STANDOUT Math

Booth: 723
Centennial, Colorado
PH: 720-279-3700 FX: 888-757-7073
www.standoutmath.com
STANDOUT Math is a math vocabulary curriculum for grades K-6 students. Our unique curriculum implements the total physical response method of combining oral, visual, and kinesthetic components to help students learn and remember math language. STANDOUT Math has been helping schools raise test scores by an average of 15 percentage points for more than 10 years. Our curriculum is implemented in more than 100 school districts across 14 countries.

## Stenhouse Publishers

Booth: 1717
Portland, Maine
PH: 207-253-1600 FX: 207-253-5121
www.stenhouse.com
Stenhouse provides quality professional development resources by teachers, for teachers. Our goal is to provide educators with a set of proven strategies from which they can choose and adapt what will work best for their students and their own environment.

## Stokes Publishing Company

Booth: 220
Sunnyvale, California
PH: 800-550-5254 FX: 408-541-9145
www.stokespublishing.com
Daily drawings for free. Self-projecting TEACHTIMER II. See our innovative Hall Pass Timer and supplemental materials for grades $3-12$. Check out our bargain box books.

## Study Help Site LLC

## Booth: 425

Boulder, Colorado
PH: 800-974-2185 FX: 800-974-2185

## www.studyhelpsite.net

Math teachers like you are now using online lesson videos from sites such as Khan Academy and TeacherTube. The Study Help Site can help you capture your lesson videos, leverage your work, reach more students, and allow you to gain a little extra income.

## Success for All FoundationPowerTeaching i3 <br> Booth: 1435

Baltimore, Maryland
PH: 800-548-4998

## www.successforall.org

PowerTeaching i3: Imagine a fresh approach to instruction that increases the motivation to learn, engages students, and results in academic success for all for free.

## T

## T3 International Conference

Booth: 216
Dallas, Texas
PH: 214-567-6409 FX: 972-767-0808

## Teacher Created Materials

Booth: 1117
Huntington Beach, California
PH: 800-858-7339 FX: 888-877-7606
www.teachercreatedmaterials.com
Teacher Created Materials publishes awardwinning supplementary educational materials for all areas of the curriculum: language arts, social studies, mathematics, science, technology, and professional resources. We also provide topical and practical professional development training for teachers and administrators.

## TEAMS

Booth: 639
Reston, Virginia
PH: 703-860-9000 FX: 703-758-4852
teams.tsaweb.org
TEAMS (Tests of Engineering Aptitude, Mathematics, and Science) is an annual competition for middle and high school students designed to help them discover their potential for engineering. Using STEM skills, students work collaboratively to solve real-world engineering challenges. In 2014 the TEAMS competition will be based on improving urban infrastructure.

## Texas Instruments

## Booth: 217

Dallas, Texas
PH: 800-TI-CARES (800-842-2737) FX: 214-479-1506
http://education.ti.com
TI gives educators proven education technology to engage students while helping them reach a deeper conceptual understanding of math and science. Learn how TI supports technology implementation by providing world-class professional development, access to free classroom-ready activities at TI's Math Nspired website, and outstanding customer support. Visit http://education.ti.com.

## Think Through Math

Booth: 530
Pittsburgh, Pennsylvania
PH: 412-894-9935 FX: 412-894-9938

## www.thinkthroughmath.com

Built for the Common Core State Standards, Think Through Math (TTM) is a Web-based instructional solution that provides adaptive lesson pathways for grade 3 through algebra 1. TTM raises math achievement because it deepens conceptual understanding and offers unlimited access to live, certified U.S. teachers. TTM's mission: college and career readiness.

## Time Timer LLC

Booth: 1741
Cincinnati, Ohio
PH: 513-561-4199 FX: 5135614699

## www.timetimer.com

The Time Timer enables math teachers to teach the concept of time in a clear and simple way. This visual timer shows how much time is left, challenges students to meet deadlines, eases transitions and test anxiety, provides a fun way to teach fractions, and facilitates classroom time management.

## TODOS: Mathematics for ALL

Booth: 1232
Tempe, Arizona
PH: 480-516-5265

## www.todos-math.org

TODOS: Mathematics for ALL is a mathematics equity organization. The mission of TODOS is to advocate for an equitable and high-quality mathematics education for all students-in particular, Hispanic/Latino students-by increasing the equity awareness of educators and their ability to foster students' proficiency in rigorous and coherent mathematics.

## TPS Publishing Inc.

Booth: 1038
Valencia, California
PH: 866-417-9384 FX: 800-578-5191
www.tpspublishing.com
Creative Core Curriculum for Mathematics with Literacy and STEM, K-8, written by teachers and other educators for all students to provide innovative coverage of the Core Curriculum standards. TPS is an adopted supplier for mathematics, partnering with Illinois State University, Invicta Education, and AB Curriculum to provide inquirybased materials.

## Triangle Coalition for STEM Education

Booth: 1535
Arlington, Virginia
PH: 703-516-5960 FX: 703-516-5969
www.trianglecoalition.org
Triangle Coalition administers the Albert Einstein Distinguished Educator Fellowship Program for the Department of Energy in partnership with other participating federal agencies. The federally authorized Einstein Fellowship Program provides a unique professional development opportunity for educators to inform national policy and improve communication between the $\mathrm{K}-12$ STEM education community and national leaders. Fellows spend 11 months working in a federal agency or in a U.S. Congressional office, bringing extensive knowledge and classroom experience to education programs and policy efforts. To learn more about the Triangle Coalition and the Einstein Fellowship Program, visit www.trianglecoalition. org.

## Triumph Learning

Booth: 1831
New York, New York
PH: 800-338-6519 FX: 866-805-5723
www.triumphlearning.com
Triumph Learning is the leading publisher of K-12 Common Core State Standards resources, standards-aligned instructional materials, and effective literacy programs. Our products increase student achievement and raise scores on high-stakes exams. We offer unique student solutions, robust teacher support, and professional development opportunities.

Tutto Luggage/<br>Mascot Metropolitan Inc.<br>Booth: 940<br>South San Francisco, California<br>PH: 650-873-7717 FX: 650-873-1623<br>\section*{www.tutto.com}

Mascot Metropolitan has been in the luggage business for more than 15 years and specializes in innovative, elegant solutions to universal problems in the mobile marketplace. The foundation of our product design is our patented luggage frame, which is sturdy, light, foldable, and four-wheel based for superb stability.

## U

## UNI Overseas Placement Service for Educators

Booth: 1135
Cedar Falls, lowa
PH: 319-273-2083 FX: 319-273-6998
www.uni.edu/placement/overseas/
Offering services since 1976, the University of Northern Iowa (UNI) Overseas Placement Service for Educators connects international K-12 schools with certified educators. Services offered include the UNI Overseas Recruiting Fair, credential and referral services, and related publications. UNI is home to the original international fair for educators. We are committed to providing personal attention and quality service to all our constituents.

## V

## Virtual Nerd

Booth: 1144
St. Louis, Missouri
PH: 877-677-6373 FX: 877-677-9373

## www.virtualnerd.com

Virtual Nerd is the nation's leading provider of video-based mathematics instruction.
Students enjoy the benefits of individualized instruction when engaging with our Dynamic Whiteboard. And the teacher toolkit provides ready-made and customizable assignments; roster management; and reporting at the school, class, and individual student levels. Stop by and learn more about our End of Course (EOC) bootcamps available for spring 2013.

## Exhibitor Directory

## W

Western Governors University<br>\section*{Booth: 820}<br>Salt Lake City, Utah<br>PH: 866-225-5948 FX: 801-274-3305<br>\section*{www.wgu.edu}

The Teachers College at Western Governors University offers regionally, nationally, and NCATE-accredited online competencybased master's degree programs in mathematics education. As a student, you'll enjoy modest tuition rates, unbelievable flexibility, and unmatched student support. Scholarships and financial aid are available.

## Wiley

## Booth: 816

Hoboken, New Jersey
PH: 201-748-6000

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## A

Abel, Todd . . . . . . . . . . . . . . . 422
Abels, Mieke . . . . . . . . . . . . . . . 261
AbleNet Inc. . . . . . . . . . . . . . . 54.2
Ackermann, Judy . . . . . . . . . . 201
Adams, Stephanie . . . . . . . . . . . 431
Adeyemi, Cheryl ............ 383
Affiliate Services Committee,
NCTM . . . . . . . . . . . . . . . 4, 112
Aguayo, Jairo . . . . . . . . . . . . . 617
Alarcon, Francisco . . . . . . . . . . 83
Albritton, Jennifer . . . . . . . . . . 146
Alejandre, Suzanne . ........ 586
Alexander, Nathan . . . . . . . . . . 574
Allen, Lloyd . . . . . . . . . . . . . . 327
Alonso, Orlando . . . . . . . . . . . . 137
Amador, Julie . . . . . . . . . 649, 691
Anderson, Chadley . . . . . . . . . 370
Anderson, Devin ...... 148, 386
Anderson, Katie . . . . . . . . . . . 128
Anderson, Sarah . . . . . . . . . . . . 209
Andreasen, Janet . . . . . . . . . . . 292
Ani, Karim . . . . . . . . . . . . . . . . 184
Annin, Scott . . . . . . . . . . . . . . . 617
Appova, Aina . . . . . . . . . . . . . . . 97
Arbaugh, Fran .......... 55, 589
Archey, Melissa ............. 716
Asturias, Harold . . . . . . . . . . . . 556
Atanga, Napthalin . . . . . . . . . 229
Atkins, Sandy . . . . . . . . . . . . . . 85
Austin, Diane . . . . . . . . . . . . . . 680
Autin, Melanie . . . . . . . . . . . . 616
Avery, Marian . . . . . . . . . . . . . 510

## B

Bacallao, Aldo .............. 545
Bacallao, Mary Kay. . . . . . . . . . 266
Baggett, Patricia . . . . . . . . . . . . . 202
Bahr, Damon . . . . . . . . . . . . . 388
Bailey, Lindsey . . . . . . . . . . . . 260
Baldridge, Kristen . . . . . . . . . . 333
Balka, Don . . . . . . . . . . . 177, 277
Bambrick, Margaret . . . . . 47, 264
Banes, Brandon ............. 619
Banker, Teresa ............... . 646
Banks, Cathy ............... . 154
Barnes, David . . . . . . . . . 273, 551
Barnes, William . ............. . 19
Barrett, Jeffrey . . . . . . . . . . . . 313
Bass, Laurie ................. 348
Bateiha, Summer. . . . . . . . . . . . 616
Bates, Dawn . . . . . . . . . . . . . . 587
Battista, Michael. . . . . . . . . . . . 119
Bauduin, Charity . . . . . . 358, 579

Bawatneh, Zyad. . . . . . . . . . . . 292 Brownstein, Beth. . . . . . . . . . . 591
Bay-Williams, Jennifer . . 166, 302 Bruce, Collin. . . . . . . . . . . . . . 537
Beatty, Heidi . . . . . . . . . . . . . . 605 Bruce, Sharon . . . . . . . . . . . . . . 216
Behrend, Jean . . . . . . . . . . . . . . 227 Brunaud-Vega, Victor . . . . . . . 329
Beigie, Darin. . . . . . . . . . . . . . . 471 Bu, Lingguo . . . . . . . . . . . . . . . 635
Bellman, Allan . . . . . . . . . . . . . 564 Buck, Judy. . . . . . . . . . . . . . . . . 582
Bennett, Cory . . . . . . . . . 248, 399 Buck, Mary . . . . . . . . . . . . . . . . . 13
Bennett, Jennie . . . . . . . . . . . . . 17 Burkman, J.. . . . . . . . . . . . . . . . . 139
Berezovski, Tetyana . . . . . 97, 532
Berks, Darla . . . . . . . . . . . . . . 210
Berndt, Diana . . . . . . . . . . . . . . . 688
Bero, Deanna . . . . . . . . . . . . . . 32
Bertolone-Smith, Claudia . . . . 311
Bevis, Sheri . . . . . . . . . . . . . . . 620
Bialik, Mayim . . . . . . . . . . . . 2, 57
Bieda, Kristen . . . . . . . . . 138, 592 B
Billstein, Rick . . . . . . . . . . . . . . 397 By
Bitter, Gary . . . . . . . . . . . . . . . . 222
Black, Joy. . . . . . . . . . . . . . . . . . . 339
Blanton, Maria . . . . . . . . 225, 495
Blumsack, Steven . . . . . . . . . . 697
Board of Directors, NCTM . . 1, 3 C
Boerst, Timothy . . . . . . . . . . . 300
Bogner, JoAnn. . . . . . . . . . . . . . . 393 C
Bolyard, Johnna . . . . . . . . . . . . 118
Booth, Julie . . . . . . . . . . . . . . . 319
Borenson and Associates
Inc. . . . . . . . . . . . . . 110.3, 409.4
Boswell, Laurie . . . . . . . . 234, 361
Bowen, Kim . . . . . . . . . . . . . . 488
Bowman, Stephanie . . . . . . . . . 33
Brahier, Daniel . . . . . . . . . . . . 433
Bratcher, Kasey . . . . . . . . . . . . . 263
Bray, Wendy . . . . . . . . . . . . . . 366
Brendefur, Jonathan . . . . . . . . . 583
Brennan, Brendan. . . . . . . . . . . . 16
Bressoud, David . . . . . . . . . . . . 303
Briars, Diane . . . . . . . . . . . . . . . 179
Briceno, Sami . . . . . . . . . . . . . . 263
Briggs, Marty . . . . . . . . . . . . . 465
Briles, Carolyn .............. . . 555
Britannica Digital
Learning . . . . . . . . . . . . . . . 681.2
Britt, Deborah. . . . . . . . . . . . . 721
Brizuela, Barbara. . . . . . . . 225, 359
Broaddus, Angela . . . . . . . . . . . 130
Brodesky, Amy . . . . . . . . . . . . . 178
Broker, Kimberly. . . . . . . . . . . . . 525
Brooks, Lisa. . . . . . . . . . . . . . . . 199
Brown, Curtis . . . . . . . . . . . . . . 407
Brown, Elizabeth. . . . . . . . . . . 496
Brown, Rachael . . . . . . . . . . . . 272
Brown, Sue . . . . . . . . . . . . . . . 648
Browning, Christine

| Brownstein, Beth. | 591 |
| :---: | :---: |
| Bruce, Collin. . . |  |
| Bruce, Sharon |  |
| Brunaud-Vega, Victor |  |
| Bu, Lingguo | 635 |
| Buck, Judy. | 582 |
| Buck, Mary . |  |
| Burkman, J.. |  |
| Burnett, James. | 91 |

Burns, Marilyn . . . . . . . . . . . . . 125
Burrill, Gail. . . . . . . . . . . 375, 429
Burroughs, Elizabeth . . . 96, 642
Burton, Dolores. . . . . . . . . . . . . 221
Bush, Lisa . . . . . . . . . . . . . . . . 637
Bush, Lucy . . . . . . . . . . . . . . . . 141
Bush, Sarah. . . . . . . . . . . . . . . . 448
Byford, Nicola. . . . . . . . . . . . . . 491
Byrne, Andrew .............. 131

## C

Caines, Michael . . . . . . . . . . . . 53
Caldwell, Janet . . . . . . . . . . . . . 255
Calhoun, Charles . . . . . . . . . . . 29
Campbell, Jennifer . . . . . . . . . . 343
Campbell, Karen. . . . . . . . . . . . 353
Campbell, Patricia. . . . . . . . . . 647
Carlson, Marilyn. . . . . . . . . . . . 163
Carney, Michele . . . . . . . . . . . . 99
Caroscio, William . . . . . . . . . . 293
Carr, Marcelline . . . . . . . . . . 471.1
Carr, Martha . . . . . . . . . . . . . . 687
Carreras-Jusino, Angel . . . . . . 329
Carrillo, Frank . . . . . . . . . . . . 108
Casey, Ruth. . . . . . . . . . . . 47, 264
Catchup Math by Hotmath
Inc. . . . . . . . . . . . . . . . . . . . 486.1
Cavanagh, Mary . . . . . . . . . . . 600
Cengage Learning . . . . . . . . 457.4
Champagne, Zachary . . . 521, 579
Charlesworth, Rosalind . . . . . 443
Chazan, Daniel. . . . . . 8, 74, 219
Chedister, Matthew . . . . . . . . 381
Chelst, Kenneth . . . . . . . . . . . . . 23
Cheng, Diana . . . . . . . . . . . . . . . . 532
Childs, Leigh. . . . . . . . . . . . . . . . . 65
Choat, Madonna . . . . . . . . . . . . 601
Choate, Laura . . . . . . . . . . . . . . 416
Choi, Taehoon. . . . . . . . . 661, 722
Chokshi-Fox, Shephali . . . . . . 423
Cholmsky, Paul. . . . . . . . . . . . . . 64
Choy, Lisa . . . . . . . . . . . . . . . . . 470
Chung, Insook . . . . . . . . . . . . 621
Chval, Kathryn . . . . . . . . . . . . . 224
Cifarelli, Victor . . . . . . . . . . . . 590

Civil, Marta. . . . . . . . . . . . . . . 529
Clark, Andy. . . . . . . . . . . . . . . . 372
Clark, D. . . . . . . . . . . . . . . . . . . . 95
Clark, Elizabeth . . . . . . . . . . . . 30
Clark, Forrest . . . . . . . . . . . . . . 30
Clark, Patty. . . . . . . . . . . . . . . 629
Cleaver, Vanessa . . . . . . . . . . 471.1
Clements, Douglas . . . . . . . 6, 685
Cliche, Cindy . . . . . . . . . . 86, 692
Coakley, Mary. . . . . . . . . . . . . . 32
Cobb, Amanda . . . . . . . . . . . . . 646
Cochran, Jill . . . . . . . . . . . . . . . 674
Coddington, Lorelei . . . . . . . . . 333
Coes, Loring . . . . . . . . . . . . . . . 322
Coffey, Margaret . . . . . . . . . . . . 569
Cohen, Kristi. . . . . . . . . . . . . . . 632
Colantonio, Erin . . . . . . . . . . . . 315
Coleman, Frances . . . . . . . . . . . 491
Collins, Anne . . . . . . . . . . . . . 369
Columba, Lynn. . . . . . . . 288, 653
Conceptua Math . . . . . . . . 249.2
Condon, Gregory . . . . . . . . . . . 554
Connor, Susan. . . . . . . . . . . . . . 686
Contreras, Jose . . . . . . . . . . . . . 395
Cooper, Sandi . . . . . . . . . . . . . . 253
Costello, David . . . . . . . . . . . . 147
Covington Clarkson, Lesa . . 317.1
Cox, Kelli . . . . . . . . . . . . . . . . 410
CPM Educational
Program .......... 164.4, 457.2
Cramer, Kathleen . . . . . . . . . . 338
Crawford-Ferre, Heather. . . . . 356
Creager, Mark . . . . . . . . . . . . . . 182
Creasy, Kim. . . . . . . . . . . . . . . . . 469
Crocker, Deborah . . . . . . . . . . . 107
Crosthwaite, Jennifer . . . . . . . 463
Currie, Stephen. . . . . . . . . . . . . 445
Cutler, Carrie . . . . . . . . . . . . . . 417
Cyr, Eileen. . . . . . . . . . . . . . . . 391
Cyrus, Vivian . . . . . . . . . . . . . 398

D
Dacey, Linda. . . . . . . . . . . . . . 524
Danielson, Christopher. . . . . . 634
Darling, Natalia . . . . . . . . . . . 718
Davidson, Tim . . . . . . . . . . . . 340
Davies, Susan . . . . . . . . . . . . . . . 12
Davis, Frank . . . . . . . . . . . . . . 376
de la Cruz, Jessica . . . . . . . . . . . . 683
DeBay, Dennis . . . . . . . . . . . . 402
DeCarli, Elizabeth . . . . . . . . . 502
DeFreese, Carol. . . . . . . . . . . . . 20
DeLeeuw, Sarah . . . . . . . . . . . 630
DelliCarpini, Margo . . . . . . . . 137

Speaker Index
Dempsey, Sondra ..... 109
Deshler, Jessica ..... 642
Desjarlais, Danielle ..... 42
Despres Hodziewich,Monique70
Devaney, Robert ..... 5
Devine, Diane. ..... 503
Dick, Thomas ..... 246, 429
Diehl, John ..... 80
Dieker, Lisa ..... 514
Dinah-Might Adventures
LP ..... 542.4, 638.1
Disney, Andria ..... 385
Dixon, Juli. ..... 233
Dockterman, David ..... 69, 283
Doerr, Helen ..... 537
Donald, Dwayne ..... 519
Dorman, Brenda ..... 332
Dougherty, Barbara. ..... 639
Douglas, Lew ..... 374
Drake, Bob ..... 288, 653
Driscoll, Mark. ..... 8, 114, 219
Dunbar, Steven ..... 677
Dyer, Elizabeth ..... 352
Dykema, Kevin ..... 15
Dyson, Nancy. ..... 623
E
Eames, Cheryl. ..... 313
Edelson, Kim ..... 393
Edenfield, Kelly ..... 301, 654
Edson, Alden ..... 110, 409
Edwards, Lori ..... 407
Edwards, Michael ..... 717
Edwards, Thomas ..... 23
Edwards-Omolewa
Nicola. ..... 40, 298
Eggleston, Jana ..... 245
Ehrenfeucht, Andrzej ..... 202

## G

Eichhorst, Kathleen ..... 650
Eley, Peter ..... 571
Ellis, Amy ..... 140
Ellis, Mark. ..... 164, 455
Ellis, Wade ..... 429
Elmore, Brenda ..... 211
Enderson, Mary. ..... 317
England, Ana ..... 280
Englert, Gail ..... 262
Englert, Kimberly ..... 496
Enzinger, Nicole ..... 668
Epp, Susanna ..... 191
Ermer, Jason ..... 401
Ernst, Kathy ..... 276, 681
Evans, Julie ..... 132

## F

## F

Evans, Marsha643Evitts, Thomas570

Fagan, Emily. . . . . . . . . . . . . . 178
Faulhaber, Greg. . . . . . . . . . . . . 342
Feikes, David. . . . . . . . . . . . . . . 465
Feldman, Ziv. . . . . . . . . . . . . . . . 45
Felling, Jane . . . . . . . . . . . . . . 197
Felton, Mathew . . . . . . . . 228, 310
Fennell, Francis (Skip). . . 149, 584
Fichtman, Nancy ........... . 230
Fick, Kathleen . . . . . . . . . . 40, 298
Findell, Carol . . . . . . . . . . . . . . 588
Fischer, Diane . . . . . . . . . . . . . . 200
Fischer, Imani . . . . . . . . . . . . . . 536
Fisher, Marie . . . . . . . . . . . . . . . 466
Foegen, Anne . . . . . . . . . . . . . . 282
Foerster, Paul. . . . . . . . . . . . . . . . 294
Foletta, Gina . . . . . . . . . . . . . . . . . 541
Foley, Gregory. . . . . . . . . . . . . . . 242
Fonger, Nicole . . . . . . . . . . . . . . 81
Forbringer, Linda . . . . . . . . . . . . 7
Ford, Shelton. . . . . . . . . . . . . . . . 102
Foss, Jacqueline . . . . . . . . . . . . . 54.1
Fraivillig, Judith . . . . . . . . . . . 706
Francis Pelton, Leslee . . . .527, 651
Franke, Megan . . . . . . . 8, 63, 219
Franklin, Ayanna . . . . . . 437, 699
Franklin, Christine . . . . . . . . . . 100
Frantum-Allen, Robert . . . . . . 456
Fricchione, Cheryl. . . . . . . . . . . 680
Fricks, Christi . . . . . . . . . . . . . . 44
Fries, Mary . . . . . . . . . . . . . . . . 105
Fueyo, Vivian . . . . . . . . . . . . . . 608
Fulmer, Jim . . . . . . . . . . . . . . . . . 56
Fuson, Karen. . . . . . . . . . . . . . . 10

Gaff, Holly . . . . . . . . . . . . . . . 245
Galgana, Jamie Lynn . . . . . . . 362
Galindo, Enrique . . . . . . 132, 182
Gallo, Annabelle . . . . . . . . . . . . 146
Galluzzo, Benjamin. . . . . . . . . . 321
Galson, Scott. . . . . . . . . . . 53, 563
Gao, Shuzhu . . . . . . . . . . . . . . 581
Gardiner, Angela. . . . . . . 225, 359
Garneau, Marc . . . . . . . . . . . . . 77
Garner, Mary . . . . . . . . . 218, 558
Garofalo, Joe . . . . . . . . . . . . . . . 430
Gartner, Phil . . . . . . . . . . . . . . . 239
Gasque, Elizabeth . . . . . . . . . . . 406
Gavin, Katherine. . . . . . . . . . . 368
Gay, Susan. . . . . . . . . . . . 130, 247
Gearhart, Maryl ..... 420
Gee, Donna. ..... 528
Geesaman, Andrew. ..... 367
George, Allison ..... 208
Germain-McCarthy,
Yvelyne. ..... 675
Gero, Sam ..... 158
Gerver, Robert. ..... 188
Getz, Amy ..... 618
Gianneschi, Stephanie. ..... 544
Giauque, Linda ..... 501
Gilbertson, Nicholas ..... 95
Ginet, Lisa. ..... 493
Giorgis, Cyndi. ..... 362
Girouard, Alain. ..... 232
Gladis, Karie ..... 279
Glancy, Aran ..... 336
Glanfield, Florence ..... 519
Glasgow, Bob ..... 249
Glauster, Sylvia . ..... 711
Glee, William ..... 340
Gluck, Stuart ..... 136
Gochenaur, Debbie ..... 367
Godfrey, Laura ..... 127
Gojak, Linda ..... 223
Goldberg, Lloyd ..... 709Goldenberg,
E. Paul . ..... 105, 304, 360
Goldstein, Mark ..... 41
Goodall, Kelly ..... 362
Goodman, Andrew ..... 463
Goodrow, Anne. ..... 328
Gordon, Deborah ..... 418
Gordon-Messer, Susannah ..... 434
Gould, Michael ..... 637
Gould, Robert ..... 700
Grady, Maureen ..... 535
Granados, Mimi ..... 689
Granger, Paulette. ..... 52, 214
Graves, Julie ..... 349
Gray, Laura ..... 332
Gray, Le’Vada ..... 289
Green, Alwina ..... 106
Green, Rebecca ..... 554
Greenes, Carole ..... 600
Greenhaus, Karen . ..... 502
Greenslade, Catherine ..... 447
Gregory, John ..... 611
Griffin, Cynthia ..... 230
Griffith, Linda. ..... 170
Grover, Ryan ..... 484
Gurrini, Maureen ..... 544
Haakenson, Lori ..... 646
Hahn, Beth ..... 43
Haistings, Jeanine ..... 387
Hall, Jeffrey ..... 141, 450
Haller, Susan ..... 271
Haltiwanger, Leigh ..... 73, 341
Hamilton, Boni ..... 690
Hamilton, Ilene ..... 323

| Horsch, Pete . . . . . . . . . . . . 186 | JUMP Math . . . . . . . . . . . 542.1 | Kriegler, Shelley . . . . . . . . . . 719 |
| :---: | :---: | :---: |
| Horton, Bob . . . . . . . . . 73, 341 | Jung, Myoungwhon . . . . . . . 578 | Krupa, Erin. . . . . . . . . . . . . 538 |
| Host, Lisa . . . . . . . . . . . . . . . 120 |  | Kubiak, Michelle. . . . . . . . . . . . 89 |
| Hosten, Melissa. . . . . . . . . . . 561 | K | Kubina, Gary . . . . . . . . . . . . 212 |
| Houghton Mifflin Harcourt 353.2, | Kader, Gary. . . . . . . . . . . . . . . 100 | Kuhns, Catherine . . . . . . . . . . 61 |
| 457.3, 486.3, 542.3, 594.4, 638.3 | Kagan, Janet . . . . . . . . . . . . . 347 | Kukahiko, Eomailani . . . . . . . 487 |
| Howell, Heather . . . . . . . . . . 547 | Kamii, Constance . . . . . . . . . . 117 | Kuntz, Cecile . . . . . . . . . . . . 695 |
| Howell, Mark . . . . . . . . . . . . 483 | Kane, Sarah. . . . . . . . . . . . . . . 175 | Kuntz, Marti. . . . . . . . . . . . . . 489 |
| Howell, Meredith . . . . . . . . . 676 | Kang, Jane. . . . . . . . . . . . . . . . 105 | Kunze, Susan. . . . . . . . . . . . . . . 89 |
| Hryniuk-Adamov, Carol. . . . . 478 | Kanoff, Ilene . . . . . . . . . . . . . 427 | Kuske, Lynn . . . . . . . . . . . . . . 622 |
| Hudson Hull, Susan . . . . . . . . 618 | Kanold, Timothy . . . . . 414, 474 | Kwon, Oh-Nam . . . . . . . . . . 576 |
| Hughes, Gwyneth. . . . . . . . . . 99 | Kapolka, David. . . . . . . . . . . . 540 | Kyriopoulos, Joan . . . . . . . . . . 689 |
| Hull, Ted. . . . . . . . . . . . . . . . 177 | Kappenberg, John . . . . . . . . . . 221 | Kysh, Judith. . . . . . . . . . . . . . 698 |
| Hunt-Ruiz, Heidi . . . . . . . . . 498 | Kara, Melike . . . . . . . . . . . . . 313 |  |
| Hyers, Karen . . . . . . . . . . . . . 267 | Karaali, Gizem . . . . . . . . . . . . 412 | L |
| Hynes, Carol. . . . . . . . . . . . . 557 | Karafiol, P. J. . . . . . . . . . . . . 239 | La Ferla, Vivian. . . . . . . . . . . 539 |
|  | Karp, Karen. . . . . . . . . . 363, 448 | Lacefield, William. . . . . . . . . . . 67 |
| I | Kastberg, Signe . . . . . . . 652, 712 | LaForgia, Anna . . . . . . . . 36, 550 |
| Igo, Erin . . . . . . . . . . . . 531, 586 | Kaur, Berinderjeet. . . . . . . . . . 173 | Lambdin, Diana . . . . . . . . . . . . 11 |
| Ilaria, Daniel. . . . . . . . . . . . 130.1 | Keller, Amy . . . . . . . . . . . . . . . . 43 | Lamberg, Teruni . . . . . . . . . . . 311 |
| Ilieva, Vessela . . . . . . . . . . . . 382 | Keller, Brin . . . . . . . . . . . . . . . 26 | Lancaster, Ron. . . . . . . . . . . . . 379 |
| Inge, Vickie . . . . . . . . . . . . . . 647 | Keller Boote, Stacy . . . . . . . . . 94 | Lang, Laura. . . . . . . . . . . . . . 645 |
| Ink, Judi . . . . . . . . . . . . . . . . 453 | Keltz, Greta. . . . . . . . . . . . . . 672 | Lange, Karin . . . . . . . . . . . . . 319 |
| Irons, Calvin . . . . . . . . . . . . . 286 | Kendall Hunt Publishing | LaRosa, Lauren . . . . . . . . . . . . 118 |
| Irons, Rosemary . . . . . . . . . . 169 | Co. . . . 54.5, 110.4, 194.3, 249.4 | Larson, Matthew. . . . . . . . . . . 516 |
| Ishihara, Melanie . . . . . . . . . . 562 | Kennedy, Dave . . . . . . . . . . . . 84 | Larson, Ron. . . . . . . . . . . . . . . 297 |
| Izumi, Alisa. . . . . . . . . . . . . . 161 | Kennedy, Paul. . . . . . . . . . . . 244 | Lasater, Marrie . . . . . . . . . . . 494 |
|  | Kepner, Henry. . . . . . . . . . . . . 572 | Laskarzewski, John . . . . . . . . . 607 |
| J | Kerrigan, John. . . . . . . . . . . . . 236 | Latulippe, Christine . . . 152, 365 |
| Jackson, Christa . . . . . . . . . . 249 | Kersaint, Gladis. . . . . . . . . . . 682 | Lawrence, Ann . . . . . . . . . . . 704 |
| Jackson, Jack . . . . . . . . . . . . . . 51 | Kim, Myong-Hi . . . . . . . . . . 576 | Lawrence, Cindy . . . . . . . . . 447.1 |
| Jackson, Melissa . . . . . . . . . . . 676 | Kim, Ok-Kyeong. . . . . . . . . . 229 | Leali, Shirley . . . . . . . . . . . . . 443 |
| Jacobbe, Tim. . . . . . . . . . . . . 100 | Kim, Young Rae . . . . . . 155, 336 | Learning Upgrade |
| Jacobs, Judith . . . . . . . . . . . . 660 | Kimani, Patrick. . . . . . . . 209, 395 | LLC . . . . . . . . . . . . 164.2, 194.4 |
| Jaffee, Mark. . . . . . . . . . . . . . 614 | Kinach, Barbara . . . . . . . . . . 473 | Ledford, Sarah. . . . . . . . . . . . . 218 |
| Jaime, Ibeth. . . . . . . . . . . . . . 295 | King, Karen. . . . . . . . . . . . . . 435 | Lee, Hollylynne. . . . . . . . 46, 481 |
| Jalalpour, Kathleen . . . . . . . . . 306 | Kinzer, Cathy . . . . . . . . . . . . 598 | Lee, Pinghsiu. . . . . . . . . . . . . 324 |
| Jarboe, Kris . . . . . . . . . . . . . . . 90 | Kirby, Lynn. . . . . . . . . . . . . . 401 | Leer, Mary. . . . . . . . . . . . . . . 330 |
| Jasper, Bill . . . . . . . . . . . 193, 693 | Kitchell, Barbara . . . . . . . . . . 430 | Leimberer, Jennifer . . . . . . . . . 688 |
| Jaumot-Pascual, Nuria . . . . . . 666 | Klein, Ray . . . . . . . . . . . . . . . 404 | Leinwand, Steven . . . . . . . . . . 354 |
| Jesberg Jr., Robert . . . . . . . . . . 673 | Klein, Valerie. . . . . . . . . . . . . 482 | Lentz, Ute . . . . . . . . . . . . . . 151 |
| Johnson, Dana . . . . . . . . . . . 549 | Kliman, Marlene. . . . . . . . . . 666 | Leong, Ronny Kwan Eu . . . . . 574 |
| Johnson, Delayne . . . . . . . . . 298 | Knighten, Latrenda. . . . . . . . . 331 | Leong, Tricia. . . . . . . . . . . . . 596 |
| Johnson, Donna . . . . . . . . . . . 493 | Knoell, Donna . . . . . . . . . . . . 88 | Lester, Frank . . . . . . . . . . . . . 644 |
| Johnson, Heather . . . . . . . . . 291 | Knote, Edward . . . . . . . . . . . 344 | Leutzinger, Larry. . . . . . . . . . . 168 |
| Johnson, Raymond . . . . . 204, 261 | Knuth, Eric. . . . . . 140, 304, 428 | Lewis, Katherine . . . . . . . . . . . 466 |
| Johnston, Elisabeth . . . . . . . . 123 | Kobett, Beth . . . . . . . . . . 149, 584 | Lewis, Suzanne . . . . . . . . . . . . . 22 |
| Jones, Connie . . . . . . . . . . . . 601 | Koehler, Mike . . . . . . . . . . . . 217 | Ley, John. . . . . . . . . . . . . . . . 144 |
| Jones, Shelly . . . . . . . . . . . . . 703 | Koestler, Courtney . . . . . 228, 310 | Lieu, Corrinne. . . . . . . . . . . . 306 |
| Jordan, Laurie . . . . . . . . . . . . 439 | Konitzer, Nancy . . . . . . . . . . 335 | Lim, Woong . . . . . . . . . . . . . 235 |
| Jordan, Nancy. . . . . . . . . . . . . 623 | Korte, Betty. . . . . . . . . . . . . . 444 | Lindebrekke, Karen. . . . . . . . . 517 |
| Jordan, Steven . . . . . . . . . . . . . 439 | Kovacic, Nancy . . . . . . . . . . . 309 | Lingo, Amy . . . . . . . . . . . 66, 363 |
| Jorgensen, Jenny . . . . . . . . . . . 124 | Kranendonk, Henry . . . . . . . . . 24 | Linnen, Lawrence . . . . . . . . . . 101 |
| Joyner, Jeane . . . . . . . . . . . . . 526 | Krech, Robert . . . . . . . . . . . . 713 | Lischka, Alyson. . . . . . . . . . . 218 |

Lishak, Lisa . . . . . . . . . . . . . . . 185
Lloyd, Natalee . . . . . . . . . . . . . . 52
Lonergan, Mark . . . . . . . . . . . 295
Long, Betty . . . . . . . . . . . . . . . . 107
Lott, Johnny . . . . . . . . . . 190, 576
Love, Quintin . . . . . . . . . . . . 317.1
Loyd, Stacy . . . . . . . . . . . . . . . 690
Lozano, Karen. . . . . . . . . . . . . . . 544
Lu, Lianfang . . . . . . . . . . . . . . . . 477
Luberoff, Eli . . . . . . . . . . . . . . 560
Luchin, Beatrice . . . . . . . . . . . 597
Luebeck, Jennifer . . . . . . 290, 396
Lueke, H. Michael . . . . . . . . . 415
Luttrell, Leanne. . . . . . . . . . . . . . 628
Lynch, Jeremy . . . . . . . . . . . . . . 441
Lynch, Sararose . . . . . . . . . . . . . 441
Lynch-Davis, Kathleen . . . . . . . 652
Lynde, Lowell . . . . . . . . . . . . . . 56
Lytton, Patricia . . . . . . . . . . . . 215

## M

Mabbott, Arthur . . . . . . . . . . . . 507
Mack, Nancy. . . . . . . . . . . . . . . 37
Maher, Carolyn. . . . . . . . . . . . . 520
Majerus, Mary. . . . . . . . . . . . . . 533
Making Math . . . . . . . . . . . . . 681.1
Mall, Alison. . . . . . . . . . . . . . . . 28
Malloy, Carol . . . . . . . . . . . . . 655
Malotka, Cathleen . . . . . . . . . 449
Mandell, Tess . . . . . . . . . . . . . . 295
Mann, Bob . . . . . . . . . . . . . . . 710
Marano, McKendry . . . . . . . . . 563
Marchionda, Hope . . . . . . . . . . 616
Marcus, Ilana . . . . . . . . . . . . . . 431
Marfai, Frank . . . . . . . . . . . . . . 163
Mark, Donna . . . . . . . . . . . . . . 506
Marks, Jeffrey . . . . . . . . . . . . . . 49
Marshall Cavendish
Education . . . . . . . . . . . . . 301.3
Martin, Jenifer . . . . . . . . . . . . . 627
Martin, W. Gary . . . . . . . . . . . 480
Martine, Ryan. . . . . . . . . . . . . . . 14
Martinez, Katie . . . . . . . . . . . . . 564
Martinez-Cruz, Armando. . . . 395
Martinie, Sherri. . . . . . . . . . . . . . 548
Martino, Sue. . . . . . . . . . . . . . . . 14
Marum, Timothy . . . . . . . . . . . 495
Mason, Marguerite . . . . . . . . . 549
Mastery Education Services/
Math-U-See .............. 594.3
Masunaga, David . . . . . . . . . . 203
Matassa, Michael . . . . . . . . . . 261
Math Learning
Center
164.3, 409.3

Speaker Index

| Mathematics Education Trust, | Mitchell, Myrna . . . . . . . . . . 464 |
| :---: | :---: |
| NCTM . . . . . . . . . . . . 142, 567 | Mitchell, Suzanne . . . . . . . . . . . 59 |
| Matheny, Ellen . . . . . . . . . . . 160 | Mittag, Kathleen. . . . . . . . . . . 187 |
| Mathurin, Andre. . . . . . . . . . . 268 | Molesky, Jason. . . . . . . . . 48, 103 |
| Matras, Mary Ann . . . . . . . . 320 | Molina, Concepcion . . . . . . . . 355 |
| Matthews, Mary Elizabeth . . . 381 | Monroe, Eula . . . . . . . . . . . . 388 |
| Mayberry, Sally . . . . . . . . . . . . 285 | Montgomery, Linda . . . . . . . . 90 |
| Mayer, Erin . . . . . . . . . . . . . 220 | Moody, Ann . . . . . . . . . . . . . 709 |
| Mayfield, Amy . . . . . . . . 250, 664 | Moore, Carolyn. . . . . . . . . . . . 258 |
| McAdam, John . . . . . . . . . . . 400 | Moore, Kevin . . . . . . . . . . . . 610 |
| McAninch, Melissa. . . . . 661, 722 | Moore, Tamara . . . . . . . 155, 336 |
| McCoy, Kathleen . . . . . . . . . 640 | Moore, Tom . . . . . . . . . . . . . 505 |
| McCrary, Marsha . . . . . . . . . . 631 | Moran, Allison . . . . . . . . . . . 309 |
| McDaniel, Mandy. . . . . . . . . . 504 | Morrin, Linda . . . . . . . . . . . . 390 |
| McDermott, George . . . . . . . . 670 | Morrow, Jean. . . . . . . . . . . . . . 145 |
| McDonald, Neal. . . . . . . . . . 402 | Moses, Shelly. . . . . . . . . . . . . . 410 |
| McFadden, Shannon. . . . . . . . 686 | Moss, Erin. . . . . . . . . . . . . . . 593 |
| McGatha, Maggie . . . . . . . . . 302 | Mossgrove, Jennifer. . . . . . . . . 272 |
| McGee, Ebony . . . . . . . . . . . 383 | Moyer, Marlene. . . . . . . . . . . 311 |
| McGinley, Deborah . . . . . . . . 292 | Moylan, Alden . . . . . . . . . . . 316 |
| McGinn, Kelly . . . . . . . . . . . 319 | Mumba, Frackson. . . . . . . . . . 635 |
| McGivney-Burelle, | Muri, Mari . . . . . . . . . . . . . 526 |
| Jean ................. 321, 436 | Murphy, Caroline . . . . . . . . . . 391 |
| McKenna, Patricia. . . . . . . . . 679 | Murphy, Shannon.......... . 587 |
| McKinley, Kathleen . . . . . . . 106 | Murphy, Stuart . . . . . . . . . . . 308 |
| McLean, Peggy . . . . . . . . 257, 389 | Myers, Paul . . . . . . . . . . . . . . 508 |
| McMann, Gregg . . . . . . . . . . . 220 |  |
| McMullin, Lin . . . . . . . . . . . . 378 | N |
| McNamara, Julie. . . . . . . . . . . 629 | Nagda, Ann. . . . . . . . . . . . . 445.1 |
| McNeill, Hannah . . . . . . . . . . 265 | Naresh, Nirmala . . . . . . . . . . . 68 |
| Meagher, Michael . . . . . . . . . . 717 | Nebesniak, Amy . . . . . . . . . . 210 |
| Mederer, Kurt . . . . . . . . . . . . . 131 | Neely, Michelle . . . . . . . . . . . 716 |
| Mendenhall, Mary . . . . . . . . . 424 | Nelson, Greg . . . . . . . . . . . . . . 543 |
| Mendle, Al . . . . . . . . . . . . . . 392 | Nesbitt, Anne . . . . . . . . . . . . 309 |
| Metz, Mary Lou . . . . . . . . . . . 594 | Neuschwander, Cindy. . . . . . . 150 |
| Meyer, Dan . . . . . . . . . . . . . . 684 | Newbury, Ken. . . . . . . . . . . . 305 |
| Meyer, Rachelle. . . . . . . . . . . . 351 | Nguyen, Kenny . . . . . . . . . . . . 172 |
| Meyer-Jacks, Lisa. . . . . . . . . . . 220 | Nichols, Janet . . . . . . . . . . . . . 454 |
| Meylani, Rusen . . . . . . . . . . . 222 | Nickerson, Rob . . . . . . . . . . . . 665 |
| Mikelman, Ricky . . . . . . . . . . 663 | Nickle, Beth . . . . . . . . . . . . . 531 |
| Miles, Ruth . . . . . . . . . . . . . . . 177 | Nimtz, Jennifer . . . . . . . . . . . . 138 |
| Miles, Victoria. . . . . . . . . . . . . 423 | Nivens, Ryan. . . . . . . . . . . . . . 624 |
| Miller, Christina . . . . . . . . . . . 338 | Noblin, Wanda . . . . . . . . . . . 196 |
| Miller, Cynthia . . . . . . . . . . . . 455 | Normington, Sara . . . . . . . . . . 259 |
| Miller, Daniel . . . . . . . . . . . . 658 | Norris, Carollee. . . . . . . . . . . . 500 |
| Miller, Elizabeth . . . . . . . . . . 391 | Norris, Kit. . . . . . . . . . . . . . . 39 |
| Miller, Loretta . . . . . . . . . . . . 619 | North Morris, Jennifer . . 44, 211 |
| Miller, Stephen . . . . . . . . . . . . 700 | Norwood, Karen . . . . . . . . . . . 638 |
| Miller-Curley, Susan . . . . . . . . 183 | Novak, Jennifer. . . . . . . . . . . . 19 |
| Mills, Valerie. . . . . . . . . . . . . 515 | NROC . . . . . . . . . . . . . . 301.2 |
| Milonovich, Brandon . . . . . . 537 | Nutakki, Nirmala . . . . . . . . . . 34 |
| Milou, Eric . . . . . . . . . . . . . . 238 |  |
| Mitchell, Arlene. . . . . . . . 96, 334 | 0 |
| Mitchell, Janis . . . . . . . . . . . . 465 | Oberlin, Maureen . . . . . . . . . . 645 |

Mathy,268Matthews, Mary Elizabeth381Mayer, Erin220McAdam, John400McCoy, Kathleen640McD504Mond402McGatha, Maggie302McGinley, Deborah292
McGinn, Kelly321, 436
McKenna, Patricia
McKinley, Kadmeen257, 389
McMan, Gregs378
м Namara, Juhe265Mear, Kich131Mendle, Al392-684
Meyer, Rachelle220
Meylani, Rusen663
Miles, Ruth423
Miller, Christina455
Miller, Daniel391
Miller, Loretta700
Miller-Curley, Susan515Milou, Eric238
Mitchell, Janis465 Oberlin, Maureen645
O'Callaghan, Robin ..... 325
O'Connor, Michael. ..... 708
O'Dell, Robin ..... 34
Oien, Janet ..... 244
Olson, Judith ..... 16, 559
Olson, Melfried ..... 251, 559
O'Neal, Judy ..... 82, 167
ORIGO Education .....  249.3
Orzech, Aaron ..... 156
Oslund, Joy ..... 38
Osterhaus, Susan. ..... 591
Osterweil, Scot ..... 180
Osthus, Larry ..... 707
Otten, Samuel ..... 592
Owen, Lisa ..... 328
Q
Q
Ozgun-Koca, S. Asli ..... 23, 717
P
Padilla, Joel. ..... 131
Pagano, Gail ..... 275
Palermo, Ginalouise . . . . . 36, 550Palius, Marjory . . . . . . . . . . . . 520
Pankowski, Evonne ..... 344
Pantozzi, Ralph ..... 461
Papakonstantinou,
Anne .....  76, 405
Pape, Stephen ..... 230
Park, John ..... 573
Park, Mi Sun ..... 155
Parker, Cynthia ..... 530
Parker, Ruth ..... 458Parr, Richard. . . . . . . . . . . 76, 405
Parsons, Jodie ..... 446
Patterson, Lynn ..... 259
Pauley, Gail ..... 335
Pearson .. 54.3, 54.4, 110.1, 110.2, ..... 2,
164.1, 194.1, 249.1, 301.1, 353.1,
409.2, 457.1, 486.2, 542.2, 594.1
Peck, Duane ..... 583
Peck, Roxy ..... 243, 700
Peisach, Betsy ..... 580
Pelton, Timothy ..... 527, 651
Pendleton, Kenn ..... 326
Penn, M ..... 60
Percival, Cindy ..... 49
Perfection Learning ..... 638.2
Perkowski, Debbie. ..... 533
Perkowski, Michael ..... 533
Perry, Christie ..... 398
Peters, Martha ..... 509
Peterson, Ingrid. ..... 247
Petetti Doherty, Mary ..... 390
Pianoforte, Donna. ..... 421
Pinter, Holly ..... 171
Pittman, Mary ..... 723
Plaisance, DesLey ..... 176
Porzio, Donald ..... 511
Post, Barbara. ..... 254
Pray, Cindy ..... 31
Price, Lori ..... 492
Price, Peter ..... 93
Professional Development
Services Committee,
NCTM ..... 278, 566
Pronk, Branch ..... 625
Pugliese, Mike ..... 350
Pulis, Tyler ..... 46, 638
Quander, Judith ..... 613
Quebec-Fuentes, Sarah ..... 193
R
Radelet, Dan ..... 83
Radon, Melinda ..... 650
Radosavljevic, Alex ..... 206
Ramirez, Nora. ..... 116, 585
Raskevitz, Michael ..... 656
Rathmell, Edward. ..... 168
Raub-Hunt, Margie ..... 677
Ray, Bobette ..... 714
Reardon, Tom ..... 57, 269
Reed, Ann ..... 517
Reel, Michelle ..... 712
Reilly, Edel ..... 594
Reilly, Yvonne ..... 446
Reiners, Mike ..... 79
Reinke, Luke. ..... 643
Restivo, Nicholas. ..... 98
Reynolds, Anne ..... 312
Reys, Robert ..... 249
Rhymes 'n' Times . . . 301.4, 353.3
Richgels, Erin ..... 189, 318
Richgels, Glen ..... 189, 318
Ricks, Thomas ..... 477, 705
Rigelman, Nicole ..... 438
Rincon, Mari. ..... 598
Rincon, Maricela. ..... 671
Rincon, Ricardo ..... 598
Rising, Jennifer ..... 259, 389
Ritsema, Beth ..... 110
Ritter, Steve ..... 371
Roberts, Charles ..... 577
Robertson, Mary ..... 21
Rock, Daryl ..... 536
Roddy, Mark ..... 281
Rodriguez, Carlos ..... 136, 284
Rogers, Beth ..... 558
Rogers, Diane ..... 409
Rogers, Elizabeth ..... 571
Rogers, Lisa ..... 250, 664
Rosenheck, Louisa ..... 434
Ross, Daniel ..... 135
Roy, George. ..... 608
Rubinstein, Gary ..... 25
Ruda, Christine. ..... 499
Rudolph, Heidi ..... 636
Ruiz Diaz, Shona ..... 547
Rule, Lynn. ..... 662
Rumsey, Chepina ..... 174
Ryan, Sarah 276, 68
Rye, James. ..... 175
S
Saada, Nivan ..... 670
Sabinin, Polina ..... 92
Saldivia, Luis ..... 18
Salls, Jenny ..... 346
Sammons, Kay ..... 419
Sammons, Laney ..... 602
Sampson, Kathy .....  14
Sanchez, Rita ..... 672
Sanchez, Wendy ..... 301
SanGiovanni, John ..... 419
Sarama, Julie ..... 6, 685
Sarlin, Alex ..... 283
Saxe, Geoffrey ..... 420
Schefelker, Beth. ..... 62
Scher, Daniel ..... 207
Schiffman, Jay. ..... 54
Schlemper, Ann. ..... 205
Schliemann, Analucia ..... 126
Schnatterly, John ..... 157
Schoen, Robert ..... 645, 697
Schoenfeld, Alan ..... 165
Schrock, Connie ..... 555, 633
Schroeder, Larissa ..... 436
Schwartz, Andrew. ..... 325
Sciolla, Alyse ..... 36, 550
Scott, Patrick ..... 704
Seeley, Cathy ..... 111
Sellars, Laura ..... 712
Selmer, Sarah ..... 118, 175
Sencibaugh, Angela ..... 604
Sencibaugh, Joseph ..... 604
Serda-King, Amy ..... 240
Serra, Michael ..... 270
Seto, Cynthia ..... 470
Severson, Amber ..... 189, 318
Sevier, Brian ..... 723
Sevim, Volkan ..... 590
Sgroi, Richard ..... 188
Sharp, Brian78Shaughnessy, J. Michael . . 115, 513Shaughnessy, Meghan. . . . . . . 300Sheffield, Linda . . . . . . . . 237, 368
Sherin, Miriam ..... 352
Shockey, Tod ..... 380
Showalter, Daniel ..... 242
Shrewsberry, Kelli ..... 87, 468
Shumway, Jessica. ..... 689
Siegrist, Raymond ..... 408
Signet, Susan ..... 148, 386
Silbey, Robyn ..... 425
Silverman, Jason ..... 143
Singapore Math Inc ..... 681.3
Sjostrom, Mary Pa ..... 248
Skoning, Stacey ..... 657
Slovin, Hannah ..... 413, 562
Smith, Dustin ..... 229
Smith, Joan ..... 468
Smith, Margaret ..... 534
Smith, Nancy ..... 35, 620
Smith, Tommy .....  29
Smith, Trey ..... 528
Snyder, Renee ..... 148, 386
Snyder, Wayne ..... 333
Song, Judy Suyong ..... 678
Sorto, M. Alejandra. ..... 472
Sovde, Doug ..... 304.1
Speer, William. ..... 129
Spencer, Erin. ..... 253
Spotts, Barbara ..... 546
Spruill, Shandi ..... 351
Stanfield, Deedee ..... 109
Stapel, Chris ..... 455
Starnes, Daren ..... 213
Staudt, Carolyn ..... 476
Steele, Genni. ..... 289
Steketee, Scott. ..... 207
Stenhouse Publishers ..... 594.2
Sterenberg, Gladys ..... 519
Stickles, Joe ..... 159
Stickles, Paula ..... 485, 658
Stie-Buckles, Michelle ..... 714
Stiff, Lee ..... 383
Stowasser, Peter ..... 198
Strader, Karen . ..... 431
Strutchens, Marilyn ..... 613
Stumpp, Donna ..... 696
Stylianou, Despina ..... 512
Suarez, Elisabeth. ..... 453
Suiter, Marilyn ..... 440
Susadya, Laurentius. ..... 661, 722
Susi, Lauri ..... 424, 585
Sutton, John ..... 334
T
Suzuka, Kara. ..... 300
Swarthout, Mary ..... 192Tabor, Josh75
Tang, Greg ..... 307
Taylor, Sharon. . ..... 426
Teacher Created Materials . . ..... 409.1
Tefertiller, Theresa. ..... 153
Terrell, Karen ..... 402
Thiessen, Richard ..... 256
Think Through Math ..... 194.2
Thomas, Christine. ..... 346
Thomas, Susan ..... 204
Thomas-Ruzic, Maria ..... 183
Thompson, Angela ..... 206
Thompson, Denisse. ..... 173
Thornton, Wendi ..... 601
Thouless, Helen ..... 466
Thrasher, Emily. ..... 437, 699
Threlkeld, John ..... 186
Tomhave, William ..... 641
Toncheff, Mona. ..... 414
Tondevold, Christina ..... 662
Trantham, Jennifer ..... 671
Treilman, Linda ..... 241
Treisman, Philip ..... 411

## Speaker Index

Winters, Jeremy. . . . . . . . . . . . . 692
Wohlhuter, Kay . . . . . . . . . . . . . 50
Wolfe, Hillary . . . . . . . . . . . . . . 279
Wood, Marcy . . . . . . . . . . . . . . 38
Wood, Sally. . . . . . . . . . . . . . . 715
Woodward, David. . . . . . . . . . 603
Wray, Jon. . . . . . . . . . . . . 302, 584
Wright, Mary . . . . . . . . . . . . . . 635
Wyberg, Terry . . . . . . . . . . . . . . 338
Wylie, Elida. 18

Y
Yamaguchi, Jun-Ichi . . . . . . . . . 452
Yang, Kichoon. . . . . . . . . . . . . 460
Yanik, Elizabeth . . . . . . . . 35, 568
Yates, Sheila. . . . . . . . . . . . . . . . 632
Yeap, Ban Har .
Yopp, David . . . . . . . . . . . . . . 226 Zenigami, Fay . . . . . . . . . . 251, 559
Yopp, Ruth . . . . . . . . . . . . . . . 164
Yoshida, Makoto . . . . . . . 330, 467
Yursa, Hope.
143
....... 104
Zeller, Erich. . . . . . . . . . . . . . . 384

Z
Zamora, Ismael ..... 80
Zawojewski, Judi. ..... 115
Zbiek, Rose . ..... 702
Zeybek, Zulfiye. ..... 182
Zilliox, Joseph ..... 487
Zimmer, Janie ..... 673
Zocchi, Mary ..... 498
Zucker, Andrew ..... 476

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## Program Advertisers (in alphabetical order)

AbleNet Inc. ..... 111
Annenberg Learner ..... 119
Bach Company ..... 143
Bedford, Freeman, and Worth Publishers. ..... 151
Big Ideas Learning ..... 89
Borenson \& Associates ..... 35, 101
BuzzMath.com ..... 90
BYU Mathematics-WeUseMath.org ..... 73
Casio Inside Front Cover
City Creek Press ..... 61
College Board ..... 33
EAI Education TAB/Saturday
ETA hand2mind TAB/General Info
Exemplars .....  6
Heinemann TABS—Thurs/Fri/Sat
Inst. for Development of Gifted Educ. ..... 155
Intel Math—Univ. of Arizona ..... 139
Jossey-Bass/Wiley ..... 144
Kendall Hunt Publishing ..... 94
Lakeshore Learning ..... 55
Larson Texts .....  30
Math for America ..... 106
Math Forum@Drexel TAB/Wednesday
Math Learning Center Outside Back Cover
Math Solutions TAB/General Info
McGraw-Hill Education Inside Back Cover
Mu Alpha Theta ..... 40
Nasco. ..... 25
ProRadian Protractors. ..... 148
Renaissance Learning TAB/Wednesday
Scholastic. TAB/Thursday, 12
SingaporeMath.com ..... 136
Stenhouse Publishers ..... 126
Taylor \& Francis Group ..... TAB/Friday
Teacher Created Materials ..... 115
Texas Instruments. Program Wrap, 42

## Coupon Advertisers (in alphabetical order)

Actuarial Foundation (2) ..... 227
Bach Company ..... 219 ..... 219
Borenson \& Associates .....  .219
EAI Education ..... 219
Encyclopedia Britannica ..... 221
ETA hand2mind .....  221
Exemplars .....  217
Eye on Education ..... 231
Hewlett Packard (2) .....  225
IXL Learning .....  223
Lakeshore Learning. ..... 223
Learning Upgrade ..... 217
Lone Star Learning ..... 223
Marshall Cavendish Education. .....  229
Math Forum@Drexel ..... 221
Math Solutions ..... 233
MathFactsPro.com ..... 225
Mathletics ..... 229
NCTM Bookstore ..... 231, 233
NCTM Member Showcase ..... 233
ORIGO. ..... 229
Perfection Learning .....  227
Stokes Publishing ..... 217
Think Through Math ..... 231
NCTM Advertising
CONFERENCES
Annual Meeting—New Orleans 2013 ..... 176
Regional Meetings 2013 ..... 170
Call for Speakers-2014 Conferences ..... 214
MEMBERSHIP
Member Showcase ..... 47
PROFESSIONAL DEVELOPMENT
Elementary School Institute ..... 161
Middle School Institute ..... 156
High School Institute ..... 166
PUBLICATIONS
Journal Editorial Sessions ..... 8, 76
New Books \& Products ..... 66, 97
Professional Development Books ..... 179
Real World Math: Online Resources ..... 19

Notes

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[^1]:    John K. Ley<br>Xavier College, Sydney, Australia<br>Centennial Ballroom G/H (Hyatt Regency)

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