

MEAD 2019 Session Descriptions

- A01: Getting Groups to Work: Introduction to Complex Instruction** by Marcy Wood and James Smith
(Complex Instruction) **FULL**
General Interest
This session is for teachers interested in promoting successful group work environments in their classrooms and who are new to Complex Instruction. We will explore how status interferes with participation in your classroom and experience some tools you can use to support all students' successful collaboration, including supporting students who under participate.
- A02: Harmonizing Problem Solving and Place Value in pK-2: Classroom Strategies that Really Work** by Kimberly Rimbey (Active Learning) **FULL**
Grades pK-2
From subitizing to multi-digit operations, place value provides a critical foundation for student success in math. Join us as we explore concrete and visual models, mental strategies, and context problems that make math meaningful in the early years. Take-back-to-your-classroom-tomorrow strategies will be included!
- A03: Numbers and Blocks** by Michelle Pienta and Sarah Schneider (Active Learning) **CANCELED**
Grades 3-5
As described directly in the AZ Mathematics Standards Introduction, "When a student understands a mathematical concept, they move fluidly between the concrete and abstract. There is evidence they are able to make sense of and justify mathematical connections." (ADE, pg 11) Come join this session that emphasizes this exact concept through the application of concrete manipulatives to perform Base-10 Operations.
- A04: Introduction to the Desmos Graphing Calculator** by Shelley Carranza and Larissa Peru (DESMOS Technology)
Grades 6-8, Grades 9-12
In this session participants will learn about the free Desmos online graphing calculator. The presenter will share how the Desmos calculators can be used for both teacher modeling and student problem-solving. Use movable points, dynamic sliders, quick regression, geometry constructions, and more to help your students make sense of math. Bring a tablet or laptop to maximize your participation.
- A05: Connecting the Abstract and the Concrete: Volume Using Disk Method** by Kim Thomas and Veronica Carlson (Active Learning)
Grades 9-12
Students complete this activity in one hour with class discussions and extensions though out the area & volume unit in Calculus. Participants will connect technology with pencil and paper to make a 3D model. Activity can be adapted for Geometry classroom. Each pair of participants will leave with their own model.
- A06: Shift Up, Down, Left, Right? Stretch, Shrink, Reflect? (A Data Collection Activity)** by Bruce MacMillan (Texas Instruments Technology)
Grade 11 through Community College
Geometric transformations applied to functions are an essential topic in any Advanced Algebra or Precalculus class. In this session we will collect data and find an algebraic function that models the data. The function will require an application of ALL of the transformations!
Bring you graphing calculator!

A07: Piloting the Brain for the Road Trip by Cynthia Dancil and Mazalina Marshall (**Brain-Based Instruction**)

Grades 6-8

Explore metacognitive strategies through tape diagrams. We will investigate the usage of tape diagrams to solve expressions/ equations and ratio & proportional thinking. Metacognitive strategies allow students to drive their own brain. They are in the driver's seat while we help to navigate the journey. Share in the dialogue with a teacher and gain the student perspective as she shares her personal journey.

A08: Piecing it All Together: Coherence Mapping by Kristen Henninger **CANCELED**

Grades 6-8

Coherence is about math making sense, which is what we all ultimately want for our students. One of the secrets to encouraging math sense making is leveraging the coherence that exists in our standards both across grades and within grade levels. In this session, teachers will first make connections across standards within and across grade levels for a big picture view of coherence. Then, teachers will drill down to specific standards with the lens of coherence using Achieve the Core's Coherence Map as a tool.

A09: Game On! Increase Number Sense and Problem Solving with Coding by Allison Davis (**Mathematics and Computer Science**)

Grades K-2

Coding is a great way to teach problem solving and increase students' number sense. During this hands-on session, you will be introduced to on and off-line coding activities suitable for K-2 students that can be integrated into your daily lessons. You will learn how to create a game atmosphere. Classroom clips and lesson resources will be shared.

A10: Ratio Reasoning through Model Drawing by Angela Nelson

Grades 6-8

Ratio reasoning can be a challenging and abstract concept for middle grade students, yet we know it is essential for future work in high school and beyond. Supporting students' struggle with ratio reasoning with models is a powerful strategy. In this session participants will engage in a visual modeling strategy to reason through solving ratio and percent problems. Connections to standards will be woven throughout, with focus on content in grades 6 and 7. The session structure is collaborative so come prepared to think, discuss, and share.

A11: Fraction Dice Activities by Karen Couch-Murphy and Mayra Vera (**Active Learning**)

Grades 3-5

Learn to create fraction dice games to activate your students' understanding of fraction concepts. Fraction games will include: plotting fractions on number lines, adding, subtracting, multiplying, and dividing fractions. Games can be modified to support 3rd, 4th or 5th grade standards. Dice activities can encourage and engage your students to explore different strategies that are efficient and effective in their fractional understanding. And of course, games improve mathematical discourse in the classroom.

A12: Fun with Shapes, Area, and Volume: Real-World Geometry by Rebecca McGraw (**Active Learning**) **FULL**

Grades 6-8, Grades 9-12

This session will consist of interesting Geometry problems appropriate to grades 6-12 students. Each problem will be connected to one or more real-world topics including packaging and the environment, biology, architecture, geography, politics and law.

A13: The Art and Anarchy of Math Disruption: Tools for Responsive Mathematics Educators by C. Billy Campbell (**Social Justice and Culturally Responsive Mathematics**) **FULL**

Grades 6-8, Grades 9-12

Calls for responsive curricula and teaching practices are opening spaces for teachers to explore content and teaching practices that engage students in ways that traditional approaches have not. From Social Justice Mathematics and Complex Instruction to Authentic Caring and a Pedagogy of Play, come learn about how to disrupt the traditional ways in which students have experienced mathematics.

A14: Growing Math with Gardens by Anne Warner

Grades 3-5

Have you ever wanted to show and engage students in real world mathematics? Come and see how a class garden can engage students in real world math, helping math come to life.

A15: Empowering Emerging Bilingual Students Through Culturally Responsive and Inclusive Mathematics Practices by Lufei Lin (**Social Justice and Culturally Responsive Mathematics**)

Grades 3-5

This hands-on workshop will reframe and relocate dis/ability with strategies to implement culturally responsive pedagogies and Universal Design for Learning in a bilingual mathematics classroom.

A16: Let's Talk Numbers! by Kristin Stutzman and Melissa Wilburn (**Number Talks**)

General Interest

Come talk numbers as we explore and practice utilizing Number Talks in the classroom. Number Talks are short mental math activities where students find the answer to math problems in their head and then share out strategies. Throughout the session you will work through number talks ranging from the Kindergarten level to Sixth grade. We will also discuss the roles of those participating in a number talk as well as the power of their implementation in lessons.

A17: Conceptual? Procedural? Wait...What?!? by Carrie Burdon and Edilia Tipton (**Active Learning**)

General Interest

What is conceptual? What is procedural? Where does this all fit? This presentation will not only answer these questions but provide a clearer understanding that will allow teachers to make better instructional decisions. Educators of all levels will engage in meaningful activities and discussions and leave with ideas that can be implemented into classrooms right away.

A18: Number Talks: Introduction for the Primary Teacher by Ashley Breen, Claudia Villa, and Juana Taite (**Number Talks**)

Grades K-2, Grades 3-5

Number Talks help students develop fluency, accuracy, and flexibility in developing conceptual understanding of math. In this session, primary teachers will learn how this daily engaging exercise will improve students' mental math abilities. Come learn how easy it is to implement Number Talks, and start to watch your students think abstractly.

A19: Fraction Frenzy: Activities to Build Conceptual Understanding by Eboney McKinney (**Complex Instruction**)

Grades 3-5

In this session teachers will walk away with activities that will engage students, while also building their conceptual understanding of fractions. We look at the fraction standards for grades 3-5 and how they build upon each other. We will also look at the fraction trajectory to help you, as the teacher, support students in their learning, using an assets-based approach to intervention.

A20: Powerful Parachutes by Niki Tilicki (Active Learning)

Grades 3-5, Grades 6-8

In this session participants will play with parachutes while learning perimeter, area, data analysis, and so much more. This is an active hands on session that can be applied in class on Monday in grades K-8.

A21: Origami Is Math In Action by Stephanie Rojas and Jenn Schilling (Active Learning)

General Interest

Origami is the art of paper folding that can be shared with students of all ages and ability levels. Learn one model and get creative and produce talking puppets and geometric modular structures. When folding in this session, you will learn the skills for folding one essential unit and the techniques for assembling basic units into a greater model. Learn how one middle school teacher is using origami and see how you can use origami to transform classroom free time into relaxing, joy filled, meaningful instruction time. This will be fun and we hope you will join us!

A22: Building Classroom Culture and Equity through Number Talks by Julie Allen and Courtney

Shadlock (Number Talks)

Grades K-2

Tired of using dot pictures and Rekenreks images during a number talk? Not sure if number talks have any value? Have students that never share during whole group? See how number talks can build student agency through classroom culture and equity.

A23: Fraction Manipulatives for Multiplication and Division by Ingrid Scarpitta

Grades 3-5, Grades 6-8

This class will provide hands-on experience with modeling fractions. We will use pattern blocks and other manipulatives to model fraction multiplication and division. Concrete understanding is critical for student understanding, but it is difficult to find hands-on examples. Some apps and pictorial transitions will also be introduced.

A24: Algebra Tiles... Let's call them TOOLS, not toys. by Sara Thompson (Active Learning)

Grades 9-12

Join us for a session of active, hands-on learning with algebra tiles. From multiplying polynomials to factoring quadratics to completing the square... Exploring high school algebra concretely.

A25: Bringing Decimals to Life! Strategies to Help Students Conceptualize Decimals by Angel Rose and Regina Bedoya (Active Learning)

Grades 3-5

This workshop is full of hands on approaches to bring decimals to life. Conceptualize decimals and bring thinking to the real world for your students. There will be active engagement and opportunities to try an activity, so you can immediately take to your classroom. Give your students the connection and conceptualization they need to be successful with decimals.

A27: Dream it! Build it! Using Desmos Computational Layer by Gregory Epstein (DESMOS

Technology)

Grades 9-12

Already familiar with Desmos and its Activity Builder? This year Desmos released Computational Layer, a programming language that allows you to build even more advanced and custom Desmos activities. If you can dream it, you can build it using Desmos Computational Layer.

A28: NextGen Personal Finance by Michele Bentivegna (**Mathematics and Economics**)

Grades 6-8, Grades 9-12

Teachers will be introduced to NextGen Personal Finance (ngpf.org), a free online resource that makes learning about personal finance fun and interactive. Teachers will go on a scavenger hunt to discover easy ways to imbed personal finance into any math class from Middle School to High School. The use of technology in the classroom is not required to benefit from this resource.

B01: 20 Days to CI - Lessons Learned from Setting Up a CI Classroom by Maggie Hackett, Marcy Wood, Ginny Wheeler, and Jennifer Valentine (Complex Instruction)

Grades K-2, Grades 3-5

5 teachers embarked on a writing project to develop tasks to implement Complex Instruction at the start of the school year. The tasks were a way for them to address status issues in the classroom that negatively affect access and equity to mathematics learning. After a brief overview of the project, team members will share their narrative of how the experience is impacting their teaching practice and they will engage the participants in a CI task that they have found to be most impactful with their middle school mathematicians.

B02: The Ten-Frame Grows Up: Using the Infinite Ten Frame for Small and Large Numbers and Operations by Kimberly Rimbey (Active Learning)

Grades 2-6

The ten-frame has been used as an organizational structure for numbers 0-10 for decades. However, this amazing tool has utility far beyond the early primary classroom. Join us as we explore ways to use the “infinite” ten-frame structure to represent numbers to many places, both whole numbers and decimals. Then we’ll take it further by exploring ways to use this tool to demonstrate operations, as well. If you teach math in grades 2-6, you won’t want to miss this session!

B03: Light It Up! by DaNel Hogan (Mathematics and Social Science)

Grades K-2, Grades 3-5

This geography connected lesson will have students graphing and analyzing data about which primary energy sources we rely on to produce our electricity. Made accessible for elementary students, the graphing is straightforward and the discussions about what they notice and what they wonder are deep. What are regional differences in primary energy sources used for electricity production? What do states around the country have in common? Why are there differences? How does a particular state compare to the national averages?

B04: Introduction to Desmos Activities by Shelley Carranza and Larissa Peru (DESMOS Technology)

Grades 6-8, Grades 9-12

Experience a Desmos activity through a student lens and learn how to use the teacher dashboard and classroom conversation toolkit to facilitate individual and collaborative student thinking. Participants will learn how to implement dynamic lessons and use pre-built activities from Desmos itself and its user community. Bring a tablet or laptop to maximize your participation.

B05: Ideas, Problems, and Activities for the Calculus Classroom by Bruce MacMillan (Texas Instruments Technology)

Grade 11 through Community College

As teachers of mathematics, we are always interested in learning new ideas, cool problems, and real world activities, that we can use in our classrooms.

In this session, I will share some of these that I have written (and stolen) for my Calculus classes during my many years of teaching.

Bring your graphing calculator!

B06: Transforming Transformations – Let’s Move It! by Betty Gasque and Judy Hicks (Texas Instruments Technology)

Grades 6-8, Grades 9-12

Explore TI-84 Plus activities designed to help students better understand transformations and make connections between transformations in the coordinate plane, transformations of functions, and transformations in the “real world.”

B07: Voting in 2022: Who Gets to Draw the Lines? by Deb Hughes Hallett (Mathematics and Social Science)

General Interest

After a new census in 2020, every state will redraw its voting districts. Mathematics is poised to play a major role in making the process fairer! Gerrymandering is being challenged in the courts and measures of gerrymandering are growing in importance. This talk will show how some of the current debates provide interesting activities for 6th grade through AP statistics.

B08: Escape Room and Modeling Workshop by Jaime Hill (Active Learning) **FULL**

General Interest

Put your problem-solving and teamwork skills to the test to unlock the clues and solve the mystery to escape! Experience problem-solving and mathematical modeling activities that can be used in the classroom in this lively and challenging Escape Room environment!

B09: Computer Science + Mathematics + Social & Emotional = Curiosity and Enjoyment in the K-5 Classroom by Suzi Mast (Mathematics and Computer Science)

Grades K-2, Grades 3-5

Computer Science and Mathematics ideas should be explored in ways that stimulate curiosity, create enjoyment, and develop depth of understanding through problem solving. As students develop technology and computational thinking skills, it is important that they apply these skills in their classroom and life, so they will understand why these skills are important. Come join this session and experience the multiple ways integration of computer science and math can truly have students engaged, interested, inventing and enjoying the integration of both areas through quality tasks and analysis of data. This session is for educators in grades K-5. All information and activities are aligned to both the Computer Science and math standards.

B10: Can You Hear the Words That are Coming Out of my Mouth? by Angela Nelson

General Interest

The mathematics content standards are carefully articulated in a cohesive manner, and it is critical that the math language students interact throughout instruction is equally cohesive. In this session teachers will engage in several instructional strategies to build their math language “teacher tool belt” to support the use of clear, concise math language as students progress from grade to grade. The content of the session is most appropriate for grades K - 5, and all of the strategies transfer seamlessly to the ELL and special education classrooms.

B11: An Introduction to Algebra Tiles and Their Use in Simplifying Expressions and Solving Equations by Maricruz Zepeda-Wilson and Stephanie Bowyer

Grades 6-8, Grades 9-12

Join us as we explore the use of manipulatives in middle school math and algebra. Learn how algebra tiles can help your students develop conceptual understanding of expressions and equations. We will explore zero pairs, like terms, and with subtraction of integers and polynomials as well as how to physically represent an equation and find it's solution.

B12: Shapes that Create by Leticia Lozano

Grades 6-8

In this session, participants will learn to fold origami figures, trace and decompose the figure into better known, simpler, geometric shapes, then measure and write expressions based on the measured shapes to find the surface area of the figure using the order of operations. Middle school extension would be to compare the surface area of the original paper to the origami figure using ratios and proportion.

B13: Mathematics in the Elementary Science Classroom by Theodore Thorp, Kaleigh Cicero, and Michelle Pienta (Complex Instruction) **CANCELED**

Grades 3-5, Grades 6-8

Participants in this class will complete a basic, elementary science experiment that can be done with a wide range of grade levels. During this experiment, participants will see how they can integrate math and science concepts seamlessly into a single activity. Participants will practice a wide array of math standards and practice standards throughout the entire experiment while also utilizing a variety of science standards and practice standards. The goal is to help educators gain an understanding of how to integrate science cross-curricularly.

B14: Inverse Function Theorem (and Others) via Graph Switching by Antonio Rubio (Active Learning)
Grade 11 through Community College

In this presentation we'll do a few exercises for active learning in calculus using graph switching (inverse function theorem, recipes for global optimization). The idea is that everyone draws a graph that illustrates an idea, encouraging students to draw different-y graphs. Then the students switch graphs with people around them and add features to the graph and then discuss the larger idea with several pairs around them.

B15: Language- Rich Mathematics Classroom = Greater Equity, Learning and Engagement by Jane Gaun (Active Learning)

General Interest

Teachers will participate in three simple and effective language routines to use in their classrooms next week. Together we will answer the question, how might a language-rich mathematic classroom benefit all students, at all levels? We will engage in some mathematics tasks enhanced with language routines and reflect on the possible outcomes for students related to deeper learning, equity, student agency and a positive mathematical identity. This session is appropriate for teachers of all types of students; general education, special education, gifted, English-language learners and adults.

B16: Magical Mathematical Creativity by Justin Powell (Complex Instruction) **FULL**
Grades 6-8, Grades 9-12

If great mathematicians are creative thinkers, why do we undervalue creativity in our classroom? Wouldn't you like to have more problem solvers in your class? How can we be sure all students have access to the magic of mathematics? Come learn how to create group worthy algebraic tasks that focus on building creativity and fostering imagination while at the same time addressing standards.

B17: Building a Fraction Sense Foundation by Dana Islas and Cassidy Hill (Active Learning)
Grades 3-5

Why are fractions so difficult to understand? Consider barriers students encounter as they learn about fractions. Take a glimpse into a classroom and explore hands-on tasks to support students' understanding of fractions.

B18: Making it Real in Math Class: Entry Points into Experimentation by Rebeka Denson and Shawn Hedayati (Social Justice and Culturally Responsive Mathematics)
Grades 6-8

What does culturally relevant curriculum look like in the classroom? Here's a look at two people's vision, implementation and reflection on how the students at different schools transformed the lesson with their own voice while learning the math standards. Together we find new entry points to experiment with real world math problems in our classroom.

B19: "They Just Won't Try:" Implementing Practices that Engage Learners by Robert Hilliker (Active Learning) **FULL**

Grades 6-8, Grades 9-12

Participants will learn about the use of "Unit Overview Guides" and "Effort Reflections" as a means to have students track their own progress with their learning. Learn how to know your students more deeply by providing your students with opportunities to frequently reflect on their own effort in class. Effort reflections provide teachers with more information about what engages their students. By using Unit Overview Guides, students have more clarity about their goals as a learner and the guides provide them with an opportunity to witness their own academic growth over time. The goal is to help students experience how their effort pays off in Math class.

B20: "Lights, Camera, Action!"- Integrating Movement and Technology Into Primary Math by Lauren Neumaier and Jennifer Blake (Active Learning) **FULL**

Grades K-2

Do you need some new and exciting ways to engage your primary learners in math? Do you have English Language Learners or other students who benefit from the use of movement and gestures? Our session will provide you with strategies and ideas that you can implement in your class for any primary math standards! Be ready to get up and moving, use technology, and approach math content through a different "lens." Please bring your iPad so you can download and use our resources throughout the session!

B21: Forget Showing Your Work!! Perform it!! by Traci Ogden (Active Learning) **FULL**

General Interest

Do you sound like a broken record every time you remind your students to "show your work"? Are simple calculation errors preventing your students from achieving a higher grade? Are you and your students tired of paper-pencil assessments/assignments? Are your students tuned out, frustrated or bored over countless worksheets? Get your students motivated, engaged, and excited to learn while you address the differentiated instructional and multiple intelligence needs of your students. Ever wonder how a song about decimals, fractions, and percents would sound? What about a fractions storybook or puppet show? It's time to get creative with assessments! I'll show you how to give performance-based assessments with rubrics that allows students to perform their mastery of concepts.

B22: 2+1 Practical Mathematical Strategies in your Students' Toolbox by Elisabeth Bankhead (Number Talks)

General Interest

What's in your toolbox for strategies? The workshop will focus on the importance of strategies for each operation by grade level. We will identify strategies for operations, what makes them viable, and how number talks can help students to create, identify, and use various strategies. Strategy usage and creation can allow students to build fluency in each operation.

B23: Every Student Can Be a Problem Solving Detective by Agi Post

Grades 3-5

The key to helping kids understand and successfully solve word problems is to help them visualize and decide the overall "structure" of any given problem. Students are then able to model their problems using tape diagrams, which will then show them what operations to use in order to find the missing piece. Participants will have the opportunity to try modeling problems of various structures using tape diagrams. Handouts include templates for all elementary level tape diagrams.

B24: Number Flexibility in the Younger Grades by Samantha Reynolds (Number Talks)

Grades K-1

This presentation will be about developing number flexibility in K/1 students. We will be dissecting number talks as well as using dot plates for subitizing.

B25: Subitizing, not Supersizing! by Carolyn Reliford and Judy Lacount (Number Talks)

Grades K-2, Grades 3-5

Subitizing is the first step of Number Sense and is often found in Number Talks. It is a way of instantly counting. In fancy math terms it would be getting to the cardinal number of a set (how many) without going through the ordinals (counting each one's position). Several methods of Subitizing will be presented during this session.

B26: Getting Rid of the Unfair Zero: Standards-Based Assessments and Rubrics in the Math Classroom by Joe Werner **CANCELED**

Grades 6-8, Grades 9-12

Learn about the fundamentals of standards-based assessments and grading in the secondary math classroom. Discover how to shift your grading procedures from practice and compliance to growth and proficiency without sacrificing student accountability. Explore ways in which you can use the Arizona Mathematics Standards to guide instruction, assess understanding, and report with accuracy. Learn how to promote sound standards-based instructional strategies from the individual classroom level to an entire system.

B29: Making Mathematics Curriculum More Culturally Responsive: A Classroom Example with Folklorico by Maura Varley Gutierrez and Grace Tapia-Beltran (Social Justice and Culturally Responsive Mathematics)

Grades 3-5

In this presentation, we will share our experience of using a framework for adapting curriculum materials (in our case, Eureka) to design and implement a mathematics lesson to be more culturally responsive and student-centered. The lesson is centered around designing a folklorico skirt. We will share a tool for adapting lessons, walk you through our lesson and the subsequent unit that the lesson evolved into making a case for building on the mathematical and community funds of knowledge of our students.

C01: From Lab School to the School Year: Implementing Access & Equity Practices in the Middle School Mathematics Classroom by Maggie Hackett, Jen Eli, Melody Salcido, and Georgina Quihuis (Complex Instruction)

Grades 6-8

13 middle-school teachers embarked on a 2-week Lab School experience where the foci included the implementation of Complex Instruction as a way to address status issues in the classroom that negatively affect access and equity to mathematics learning. After a brief overview of the project, members of the team will share their narrative of how the experience is impacting their teaching practice and they will engage participants in a Complex Instruction task.

C02: Make Math Meaningful: Valuable Visuals That Connect Fractions and Decimals by Kimberly Rimbey (Active Learning) **FULL**

Grades 4-5, Grades 6-8

Making sense of decimal concepts and operations requires strong connections with fractions and place value. Join us as we explore fraction and decimal multiplication using concrete and visual models, connected to written work, and grounded in problem solving. Take-back-to-your-classroom-tomorrow strategies will be included!

C03: Binary Math Magic by DaNel Hogan (Mathematics and Computer Science)

General Interest

Accessible for students from Pre-K through 12th grade, learn how to engage students to use binary to perform a "mathemagic" trick for friends and family. In the meantime, teach them about the binary number system at the foundation of all digital communication. We have seen 3 and 4 year olds master this trick as well as elementary, middle, and high school students. Each participant will get at least one set of laminated binary number trick cards.

C04: Introduction to Desmos Activities by Shelley Carranza (DESMOS Technology)

Grades 6-8, Grades 9-12

Experience a Desmos activity through a student lens and learn how to use the teacher dashboard and classroom conversation toolkit to facilitate individual and collaborative student thinking. Participants will learn how to implement dynamic lessons and use pre-built activities from Desmos itself and its user community. Bring a tablet or laptop to maximize your participation.

C05: How to Host a Family STEM/STEAM Night by Veronica Carlson and Kim Thomas (Texas Instruments Technology)

Grades 9-12

Hosting a Family STEM/STEAM Night is an awesome event! This is a great Family Involvement activity for your school and can be supported by Title I Funds. STEM/STEAM Nights generate excitement by allowing families and staff members to explore STEM/STEAM together in a fun and hands-on way!

C06: Lights, Camera, ACTION! Preparing for the ACT® by Betty Gasque and Judy Hicks (Texas Instruments Technology)

Grades 9-12

Students who only excel at procedural fluency may have a tough time on the math section of the redesigned ACT. How can we leverage the TI-84 Plus to develop a deeper understanding of mathematical concepts? We will provide calculator strategies and activities that promote conceptual understanding.

C07: The Wealth Gap Task - Helping Student Read the World by Linda Fulmore (Social Justice and Culturally Responsive Mathematics)

General Interest

How do you define net wealth? How is wealth different from income? Can someone have zero wealth, negative wealth? We need your help to implement this task and then discuss implications for social justice.

C08: Inequality and Health a Mathematical Perspective by Charles Collingwood and Marlee Ranieri
(Social Justice and Culturally Responsive Mathematics)

Grades 9-12

“Socially based disparities in health status continue to plague even the most egalitarian societies despite public policies that aim to reduce or eliminate them. Epidemiologists have long known that poverty is associated with higher rates of morbidity and mortality. In addition, a growing body of research has found a positive association between mortality and the extent of inequalities in income in a particular society”. In this session we will do a mathematical examination of income and wealth disparities as it relates to the social determinants of health. We will use the Gini Coefficient to analyze income inequality in the United States. Participants in this session will work in groups to develop the skills that are needed to create a Gini coefficient using sample data. By the end of the session participants will have developed the necessary skills and have the materials to implement a lesson on measuring inequality in its many forms.

C09: Number Ninjas: Building Number Sense in K-2 by Amy Hawkins and Meghan Gulley (Active Learning) **FULL**

Grades K-2

Help your students become number ninjas as they develop their number sense in engaging and hands-on ways. Learn about games, activities, and strategies that help students to build their number sense and begin to work with numbers in a more flexible way. From number talks to counting collections, we will explore many ways you can help your young learners build an understanding of numbers and how to use them.

C10: Number Talks mean Math Talk by Yolanda Everett and Cynthia Avery (Number Talks)
Grades K-2, Grades 3-5

Have you heard about Number Talks? Do you wonder what all the fuss is about? Join us as we discuss and explore the pedagogy behind Number Talks and how it will open communication with your students about numbers and how they work together. Experience Number Talks as a participant and learn how you can use it in your classroom to build Number Sense and vocabulary from K-5.

C11: Using Model Drawings with Fractions by Nancy Casagrande
Grades 3-5

During this session, participants will learn how to use Model Drawing to solve, and conceptually understand, word problems with fractions.

C12: Shhh... Silent Board Games and Patterns... Making sense of $y=mx+b$. by Sara Thompson and Wendi Unruh (Active Learning) **FULL**
Grades 6-8

Building conceptual understanding of $y=mx+b$... Easier said than done. Join us for some fun and engaging problem solving with patterns as we work in teams to shift between the multiple representations of the linear web AND play some Silent Board Games. Learn how your students can (and will) make connections between a table, graph, rule, and pattern to fully understand and apply $y=mx+b$ in multiple contexts.

C13: Pokémon are More Interesting than Watermelons by C. Billy Campbell (Complex Instruction)
Grades 6-8, Grades 9-12

Creating lessons and tasks that are interesting and engaging as well as academically aligned to the standards can be difficult. Come learn how to use knowledge about your students to create engaging learning experiences for them. Specifically, we will discuss how to modify existing lessons and tasks or create brand new ones in order to make them more responsive to our students and their lived experiences.

C14: Number Talks in Grade 2 by Rita Simonton and Antonia Gant (Number Talks)

Grades 2

Have you ever wanted to know what your students are thinking when they are solving mental math problems? Number Talks can help you see how they process mental math problems. In Number Talks you create a safe environment where the students share out their strategies and answers. And give you, the teacher, better insight into their thought process. As the facilitator you strictly facilitate the 5-7 minutes of mental math. You set the protocols for participation which allow students to feel free to speak up without being judged. The process allows the students to learn from others as well.

C15: Vectors in Geometry and in the World by William Faris

Grades 9-12, Grade 11 through Community College

Vectors are a natural part of geometry, since they make it more algebraic without destroying its beauty. Also, applications of geometry involve vectors such as displacement, velocity, acceleration, and force. This talk will describe bound vectors, sliding vectors, and free vectors. Of these sliding vectors are the least familiar, but they give a nice way to directly engage students.

C16: Forward Progress for ALL Students: Key Strategies for Secondary Teachers by Amy McDonald and Harold Campbell (Active Learning)

Grades 6-8, Grades 9-12

Differentiating in a mixed-ability secondary classroom can be difficult to say the least. Often classroom instruction targets the middle-ability student and leaves the struggling student to struggle and the high-achieving student unchallenged. This presentation contains key strategies for engaging ALL students (including students with disabilities) in meaningful activities that promote both engagement and forward academic progress (greater understanding of mathematical ideas and enhanced problem-solving abilities).

C17: Econ in Elementary School is a Thing! by Julie Groce (Mathematics and Social Science)

Grades K-2, Grades 3-5

Participants will participate in example lessons that can be used in the classroom the very next day! We will explore picture books and how they can help apply concepts of economics, such as decision making, entrepreneurship, scarcity, and trade. We will also look at activities for money markets, personal finance, and inflation. Yes, these activities are geared for kindergarten through fifth grade!

C18: Slope it Up! by Andrea Meyer, Tara Tracy, Cory Lambson, and Katie Johnson

Grades 6-8

We will present tasks that you can take and use to introduce slope into your junior high classroom. We will engage in different tasks for the beginning, middle and end of the process of exploring what slope is and how to find it. We will begin with a couple of activities for pattern development, making tables and writing rules for subsequent figures in the patterns. We will then look at a couple of tasks related to figuring and comparing rates of change. We will finish with using algebra tiles to rewrite equations in slope-intercept form.

C19: Patterns & Visualization in Middle School Mathematics by Jen Hendrickson, Brandon Dennison, and Matt Kornacki (Active Learning)

Grades 6-8

Research shows that students need to make strong connections in visualizing algebraic thinking. Come join us as we explore this process and leave with a variety of resources to immediately implement into your classroom!

C20: Teaching Math Affectionately by Niki Tilicki (Active Learning)

Grades 3-5, Grades 6-8

People work harder when they are appreciated. This is a proven fact. How do we show students that we appreciate them in just 50 minutes. How do we teach them math when emotionally, they don't care, they are scared, or they are not motivated? This session will focus on helping teachers with the effect of their math teaching which in turn will make them more effective with all of their students.

C21: Let's Talk Numbers! by Shannon Marchal, Carmela Zega, Terrine DeFoor, and Mary Paris (Number Talks)

Grades K-2, Grades 3-5

Number talks offer students a short daily routine and provides them with meaningful, ongoing practice with computations. It is a powerful tool that builds computational fluency. The expectations are that they will use number relationship and the structures of numbers to add, subtract, multiply and divide. Presenters will offer the process and examples for K-6 including special education. Attendees will have the opportunity to create their own and share.

C22: Connecting the Disciplines: Utilizing Precision of Language to Deepen Mathematical Understanding by Janet Acree and Janine Tech
General Interest

Have you ever struggled to help students understand why you cannot add halves and thirds, without finding a common denominator first? What about understanding square units beyond tacking on an exponent to the unit? In this session, participants will focus on utilizing precision of language and noun-adjective connections to help explain a variety of concepts and improve students' mathematical understanding.

C23: Middle School Chance Experiments by Robin Maxey and Stacy Bansback
Grades 6-8

In this session, participants will explore the study of probability. We will interpret probabilities, and compute probabilities in simple settings. Participants will be introduced to the idea of drawing inferences based on data from random samples.

C24: Lollipops and Random Sampling by Patrick Hopfensperger
Grades 6-8, Grades 9-12

This investigation follows the four components of statistical problem solving put forth in the Guidelines for Assessment and Instruction in Statistics Education (GAISE) Report. The four components incorporated in this investigation are: formulate a question, design and implement a plan to collect data, analyze the data by measures and graphs, and interpret the results in the context of the original question. Using data collected from a random sample we will estimate a population parameter (number of lollipops). We will generate multiple random samples to gauge the variation in our estimates and draw a conclusion about the number of lollipops in the population.

C25: Creating and Assessing Fluency in Mathematics by Aliceson Smith (Active Learning)
Grades 6-8, Grades 9-12

This in an interactive session where teachers will be provided with concrete examples of how to use rubrics based in "Fluency" as defined by the AZ state standards to assess individual and PBL activities. Teachers will be given time to create their own Fluency Rubrics to suit the needs of their instructional styles and current learners.

C26: Building Numerical Reasoning Though Number Talks and Trajectories by Roby Althaus and Nancy Hayes (Number Talks)
Grades 3-5

In this session, teachers will be presented with the value and benefits of number talks for students. Teachers will also have the opportunity to participate in a variety of number talks. In addition, teachers will examine the addition and subtraction math trajectories. They will compare them to the Arizona Math standards to help connect these building blocks to goals for learning, and to help target interventions to provide the support exactly where it is needed.

C27: Haddie Nuff Paper by Sharon Newman (DESMOS Technology)

Grades 7-12

Are you tired of dealing with the mounds of paper? Do you tire of students taking notes and then never using? In this session you will take with you a quick way to handle the mounds of paper, take attendance, and quickly get work to absent students. You will also have a way to get students to summarize and use their notes in a quick interactive notebook way but in a much smaller form and less work for you.

Intended Audience: Math Teachers grades 7-12

D01: Mathematical Superheroes: Creating a Justification League in your Classroom by Marcy Wood and Jennifer Eli (Complex Instruction) **FULL**

General Interest

Each of our students has the potential to be a mathematical superhero with important problem solving powers. This K-5th grade session will focus on ways of identifying each student's superpower and helping students learn to work together to create mathematical justification leagues and defeat monster problems.

D02: What Makes Value-Counting Money so Difficult? Innovative Strategies for 1st-5th Grade Problem Solving with Money by Kimberly Rimbey (Active Learning) **FULL**

Grades K-2, Grades 3-5

During this session, we'll playfully entertain the development of money concepts from conceptual understanding to fluency. And you'll walk with use-it-tomorrow strategies. Join us as we tackle the difficult issues inherent in learning to value-count and solve problems with money and tools.

D03: Toss, Jump, Break: Engage Students with Data by Jennifer North Morris (Active Learning)
Grades 9-12

The pressure is higher than ever to create lessons that are meaningful for our ever changing student population. Come toss, jump, tie, and break things to engage students and explore concepts that can extend from algebra to precalculus. We will collect data, use various platforms, and compete with each other to explore properties of functions and predict mathematical behavior.

D04: Introduction to Building Desmos Activities by Shelley Carranza and Larissa Peru
Grades 6-8, Grades 9-12

Learn how the Desmos Activity Builder can help you create dynamic activities as well as how to use pre-built activities from Desmos itself and its user community. We'll show you how to get started building your own activity and answer all of your questions along the way. Bring a tablet or laptop to maximize your participation.

D05: Limits and l'Hospital – Learning Through Visualization by Kim Thomas and Veronica Carlson
(Texas Instruments Technology)

Grades 9-12

Calculating limits in calculus is more than following a set of rules and guidelines. Understanding limits, including the application of l'Hospital's Rule, is made easier using visualization techniques using graphing technology. Assessment and practice for AP Calculus will also be addressed.

D06: Coding and Geometry- a Winning Combination! by Judy Hicks and Betty Gasque (Texas Instruments Technology)

Grades 6-8, Grades 9-12

This session will help those who are new to coding get up to speed! We will bring coding and geometry activities together by coding the TI-84 Plus CE to make a robotic vehicle (TI-Innovator™ Rover) perform different geometric challenges.

D07: Have a Great Idea? Find a Grant to Make It Happen by Linda M. Fulmore
Grades 6-8, Grades 9-12

Are you an innovative educator? Do you desire something special for your students, teachers or yourself? Let's find a grant to make it happen! Administrators welcome!

D08: It is Never Too Early to Learn About Finances by Kristen Henninger (Mathematics and Economics)

Grades K-2

In this session teachers will work through lessons on personal finance that are geared for younger students. These lessons are free to all and written by the Federal Reserve Bank of St. Louis and Dallas. After engaging in the lessons, teachers will collaborate on what it would look like in their own classrooms as they begin to incorporate these amazing resources.

D09: ArtMath Collaborative Project in College Algebra classes by Elizabeth Lugosi (Active Learning)

Grade 11 through Community College

In the interactive session, Dr. Lugosi will lead the audience through the ArtMath Collaborative Project implemented in her College Algebra classes, share the different tasks her students had to accomplish during the semester and ask the audience to think as freshmen students might think about the questions. With some examples, she will demonstrate how students' thinking about functions evolved throughout the project.

As an Active Learning strategy accomplished through teamwork, the ArtMath Collaborative Project was used in College Algebra classes, with the help of colleagues from the School of Art at the University of Arizona. Come and experience art in the College Algebra setting.

D10: Number Talks Rock! by Elizabeth Hernandez and Lori Ramirez (Number Talks)

General Interest

What is a Number Talk you ask? Number Talks are short (10ish minutes), daily exercises aimed at building number sense. Number sense is the ability to play with numbers meaning students can visualize problem solving, perform calculations quickly, and are flexible in their mathematical strategy. Number talks provide students with the opportunities to think independently, and explaining/justify their own thinking. Come and experience Number Talks and learn how to use them to create powerful thinkers!

D11: Time to Subitize! by Nancy Casagrande

Grades K-2

Subitizing is the foundation for number sense. It is more than the ability to instantly recognize a quantity of objects without counting. Come learn activities that you can immediately bring into your classroom to help with subitizing.

D12: Teaching With a Twist: Using Rubik's Cubes in the Classroom. by Christina Loria (Active Learning)

General Interest

Have you ever wanted to incorporate Rubik's Cubes into your math lessons? Have you considered starting a Rubik's Cube club at your school? Did you know you can borrow class sets of cubes to use in these endeavors? Did you know that you could borrow hundreds of Rubik's Cubes at a time to build mosaic artwork? In this session, you will learn about how one TUSD math teacher has implemented the use of cubes with 7th through 12th graders and you will get some hands-on time with the Rubik's Cube. This session is appropriate for all grade levels (K-12) and appropriate for all levels of cube proficiency.

D13: Complex Instruction 2.0 by Jennifer Kinser-Traut, Maggie Denham, and Graciela Barraza (Complex Instruction)

General Interest

We will discuss, practice, and reflect on a number of more advanced strategies of Complex Instruction (i.e., assigning competency, huddles, etc). This session is designed for teachers who have some knowledge of Complex Instruction (including an earlier session at MEAD 2019).

D14: Real Data in the AP Statistics Classroom - Let the Students Make a Mess! by Liz Warner
(Mathematics and Social Science)

Grades 9-12

Statistics is one of the most practical courses for many high school students. Unfortunately, the class is too often based on a textbook. This talk will show you how students can learn statistics by doing statistics in their community. Examples discussed will include a class that conducted a survey at a food bank, then analyzed the data to let the food bank know how their services were being used, and where they could improve. We will discuss how to find sources of data on or off campus, and how to make sure all students are learning the statistical concepts they need. The ideas in this class can be applied to any upper level high school math class, including business mathematics or college algebra.

D15: We Like To Move It! Move It! by Heidi Sweet and Jennifer Thompson (Active Learning)

Grades 6-8

Come and participate in 4 different styles of in-class learning activities that foster student participation, engagement, and conversation in your mathematics classroom. Each of the techniques involve high student participation and motivation while allowing the students to incorporate some movement to help increase cognitive abilities. We will provide both an opportunity to participate in a short example of each type and ways differentiate for all learning levels. Leave the session with ways to “do” your Monday lesson differently!

D16: Math is Universal: Bridging the Experience Gap for All Students by Brandon Smith (Brain-Based Instruction)

Grades 3-5

How can we broaden the kinds of math experiences that students are exposed to both inside and outside of the classroom? How can we remove barriers to learning that many English-language learners and students with disabilities face with traditional instruction? Take a deep dive into the importance of engaging students in mathematical problem solving and how to make this a reality in your schools and communities. Discover what makes for rich math experiences that are accessible to all students.

D17: Hexaflexability -- Using Origami to Introduce or Review Slope by Brie Finegold (Active Learning)

Grades 6-8

You will make durable hexaflexagons using sketchbook paper and sharpies. As we go, we will discuss slope, which is a necessary concept for the correct folding of the hexaflexagon. I'll provide a few handouts for teachers to use in their own classrooms as well as book suggestions for those interested in additional similar projects.

D18: Meeting the Demand! by Tara Guerrero and Lauren Daniels

Grades 3-5, Grades 6-8

How do you meet the specialized academic language demands in mathematics when planning and delivering lessons? Learn simple, adaptable, evidence-based Mathematical Language Routines that support all students, including Emerging Bilinguals. Experience MLRs firsthand and see them in action across multiple grade level classrooms to consider how they powerfully amplify and develop students' mathematical language.

D19: So You've Decided to Give Standards Based Grading a Try... by Cynthia Bowman and Ellen Sizemore

Grades 6-8, Grades 9-12

Standards-based grading is an innovative practice in education that focuses on student growth of specified learning targets to increase student achievement. It is best practiced in a school culture with the help of professional learning communities. By dividing up the content into the standards or smaller learning targets, we are able to better communicate feedback to students.

This session would be ideal for a teacher who has already been sold on the practice of standards-based grading and is looking for more guidance on how to fully implement this in their classroom. We will be answering the following questions in our session: How do I set up a standards based gradebook? How do I grade standards based assessments? How do I decide what mastery of a standard actually looks like? How do I report the information back to students? What do students do with the information after the test? How do I assign an overall grade to my students at the end of the quarter/semester?

Please bring an assessment with you that you have used this year or plan to use this year. If time allows, we would like to help you align your next assessment. We will also provide lots of examples of what we have used so far this year.

D20: Awesome Algebra by Niki Tilicki (**Number Talks**)

Grades 3-5

We always look at the lower 25% and work to raise these students up, we have gifted classes for the upper 3% and we are missing the 72% in between. In this session, I will facilitate children as they lead elementary teachers through an Algebraic process. This session will inspire you to do more for your students, give you the tools to do so, and provide you with a format for changing the way you teach math and reach your students!

D21: Talk Some Sense into Me! by Teal Reinhardt and Marta Herrera

Grades K-2, Grades 3-5

Each year teachers notice a struggle in number sense in all grade levels. "Talk Some Sense into Me" is here to share ideas and strategies including, but not limited to, number talks and number sense. We will explore how to implement number talks. We will also present some fun ways to build number sense through activities and games in the classroom. Be ready to talk some sense into your students!

D22: Using Manipulatives to Explore Mathematics by Sarah Kirshbaum, Deborrah Black, and Katherine McDonald (**Active Learning**) **FULL**

Grades 3-5

In this workshop, you will learn how to use manipulatives to explore mathematics. We will teach you how to extend your students' thinking of math through hands-on and physical representations of the concepts they are learning.

D23: Subitizing not Supersizing Math by Judy LaCount and Carolyn Reliford (**Number Talks**)

Grades K-2

Subitizing is an important mathematical concept that can greatly benefit students achievement in numbers. Subitizing is the ability to "instantly see" how many. The students spontaneously recognize and discriminate small numbers of objects. The students who can successfully subitize are able to just know a group of numbers and recognize the pattern. We move students from one by one counting to subitizing.

D24: Fun with Math: How to Increase Number Sense, Fluency, and Confidence with Math Games by Lori Valentine and Jaime Drobeck **FULL**

Grades K-2

Finding ways to engage students in mathematics learning, especially those students who struggle, can be challenging. Games can give students relatively low risk opportunities to explore number concepts, number combinations, place value, patterns, and other important mathematical concepts. When played repeatedly, games support students' development of computational fluency and confidence. In addition games can help students develop familiarity with the number system and with "benchmark numbers" (such as 10s, 100s, and 1000s). You will leave with a collection of games that you can take back to your classrooms and use next week.

D25: Language in Math (Spanish and Math development) by Ilyssa Whitehead (Social Justice and Culturally Responsive Mathematics)

Grades 6-8

Math is a language; full of rules, vocabulary, etc. For some students learning math can be difficult enough, but learning math in a different language is an entirely different phenomena. Although many academic math terms have latin base, language development in math is essential to their learning in addition to providing relevant experiences and different tools/manipulatives to encourage development of concepts behind math, not just the algorithms.

**D26: Creating Mathematics in the Secondary and Undergraduate Classroom by Madhav Kaushish
Grades 6-8, Grades 9-12, Grade 11 through Community College,**

An alternative to students acquiring the mathematical knowledge presented in textbooks is students creating mathematics. This involves students coming up with conjectures and proving them. However, even more radically, it involves students constructing theories - setting up systems of axioms and definitions. In this session, participants will experience examples of how we can achieve this in a middle school, high school or undergraduate classroom.

D27: Desmos - Another look at Systems by Sharon Newman (DESMOS Technology)

Grades 9-12

You may already understand how Desmos can help students understand solving systems graphically. But you can also help students understand the elimination and substitution method. This session will look at several Desmos activities to help students understand how all the methods relate as well as application problems.

Intended Audience: Math Teachers grades 7-12

**D28: Using Coding to Create Geometric Art by Daniel Schneider (Mathematics and Computer Science)
Grades 6-8, Grades 9-12**

Having students experience the overlap between Geometry & Art - fractals, tessellations, curve stitching, etc - can be one of the most engaging, creative, and fun units in a classroom. But, actually *drawing out* the artwork can sometimes be tedious, repetitive, and time consuming - luckily, these are all things that computers are great at! Come to this session to get hands-on experience with basic programming commands to control a digital Turtle and see how quickly you can dive-in to creating geometric art. Using this resource with your students allows you to create engaging classroom lessons and can be adapted towards authentic project-based assessments of student skills and reasoning.

