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41st Annual Spring Conference

March 24, 2018

Nazareth College

A quick look at today's schedule:

Room	Session 1 8:30 – 9:30	Session 2 9:40 – 10:40	Session 3 10:50 – 11:50
012	I have identified a sequence of rigid motions – now what? *Steve West*	Not Your Grandpa's (nor the CCSSM's) Constructions *Steve West*	Angles and Circles: A Constructivist Approach using 360° Protractors *Craig Smith*
014	Exploring the TI-Innovator Hub *Seth O'Bryan & Diane Broberg*	TI-Nspire - The next steps: Get the most out of your TI-Nspire. *Diane Broberg*	Tips & Tricks for Testing *Diane Broberg*
219	Origami in Geometry, STEM, and Art *Robert Rogers*	Differentiated Math Classrooms in Action *Nicole Quick, Angela Messenger, & Jessica Colavecchia*	The Rochester Math Teachers' Circle - Last Mathematician Standing *Matt Thomas & Nicole Juersivich*
301	AP Statistics Encounters AP Calculus *Paul & Barbara Sadler*	Comparing Groups via Simulation *Barney Ricca*	Surprising Probabilities *Barney Ricca*
302	Breakout of Review Boredom with BreakoutEDU! *Kevin Laley & Joseph Ahl*	Mastery Grading! Have your students chase learning, not grades. *Ryan Horst*	Exploring linear and quadratic functions with the TI-84 Plus CE graphing calculator *Miriam Santana-Valadez*
306	Chip Trading in the "Land of 'N's": A Foundation for Place Value, Base Ten Operations, and More *Jordan Titus & Scott Schaefer*	Lies, Damn Lies, and Middle School Statistics *Andy Mitchell*	Using Google Apps to Strengthen Math Instruction *Andy Maillet & Erick Mock*
315	Number Talks Throughout the Grades *Stephanie Martin & Melissa Staloff*	Empowering Student Voice in the Elementary Math Classroom *Jessica Sheridan*	Taking the Number Line Off the Wall *Kari Hamelinck*

Welcome to

AMTRA's 41st Annual Spring Conference

We are excited to have you as a guest and expect that your time with us will be both educational and inspirational.

Special Thanks to...

Nazareth College for providing a wonderful site for our conference

TI Loans for the TI Technology

Our presenters for volunteering their time to share their wonderful ideas so that we may all return to our classrooms and continue to engage our students in awesome lessons.

Use #AMTRA18 to tweet about your conference experience	Wifi Network: **NazCommunityWifi5** Password: **GoldenFlyers**

Please use this conference planner to organize your experience:

8:30 – 9:30	Session 1	_____
9:40 – 10:40	Session 2	_____
10:50 – 11:50	Session 3	_____

12:00 – 1:00   *Lunch served in Shults Center Forum*

12:45   *Business meeting will be held in the Forum*

1:00 – 1:45   Keynote Address in Forum

2:00 – 3:00   Grade Band and Content Forums – Shults Center

Elementary Forum	Forum
Middle School Forum	Reading Lounge
Algebra I Forum	Forum Annex
Algebra II Forum	1924 Room
Geometry Forum	International Room
College Forum	Porthole Lounge

I have identified a sequence of rigid motions – now what?   HS, College
Steve West
SUNY @ Geneseo, Retired

The Common Core State Standards for Mathematics states that to show congruence of two geometric figures, you must identify a rigid motion or sequence of rigid motions that maps one figure onto the other. Is this a guessing game or is there a strategy involved? Once you have found the required rigid motion(s), does this constitute a proof? In this session, participants will learn strategies that assist in identifying appropriate rigid motions, using the TI-Nspire™ CX technology to confirm the selection and discuss what is required for a real proof.

Exploring the TI-Innovator Hub   HS
Seth O'Bryan & Diane Broberg
The Harley School & Allendale Columbia School

Students can use coding to write a calculator quiz and have a buzzer go off for correct answers. Participants will write their own codes by the end of the session. Participants should see this session as a time to focus on learning and not teaching. They may come up with instructional ideas, but the focus of the session will be learning, collaborating, and thinking.

Origami in Geometry, STEM, and art   HS
Robert Rogers
SUNY Fredonia

This talk will demonstrate how origami can be used to examine topics from geometry and will present STEM applications from industry along with samples of origami artwork.

AP Statistics Encounters AP Calculus   HS
Paul & Barbara Sadler
McQuaid Jesuit (retired) & The Aquinas Institute

This workshop describes a hands-on data-gathering classroom activity where AP Statistics students create a histogram to which they can apply AP Calculus concepts.

SESSION 1   8:30 – 9:30

Breakout of Review Boredom with BreakoutEDU!   MS, HS
Kevin Laley & Joseph Ahl
Fairport High School

Ever gone with a group of friends to an escape room? Working as a team, you complete a series of puzzles to discover clues that help you unlock your way out in the time allotted. With BreakoutEDU, you can set up your own "escape room" for your students to use as a fun way to review for a unit test or for the end of the year. We'll show you an example of how you can set this up, give you experience trying a sample game, and work collaboratively within subject areas to start creating your own game.

Chip Trading in the "Land of 'N's": A Foundation for   Elem, MS
Place Value, Base Ten Operations, and More.
Jordan Titus & Scott Schaefer
Hornell Jr. High School & Lima Primary School

The "Chip Trading in the Land of 'N's" game is a hands-on activity for use in any level of primary/elementary/middle school classroom. Using simple colored counters and a trading mat or "till," students start with a simple counting game. For Kindergarten students, it is an engaging exercise in counting objects and naming numbers using one-to-one correspondence, while reasoning about "groups" or "bundles." Working in the "Land of Fives" (and the "Land of Threes" or the "Land of Twos" or the "Land of Tens"), the concept of place value is developed with a broad foundation so that students can encounter examples of this higher level concept while constructing the meaning of positional number notation, place value, and exponents. At later elementary grades, "Chip Trading" helps model a more concrete model for grouping and regrouping, which supports the teaching of traditional algorithms for operations in Base Ten. In middle school grades, this activity deepens the understanding of place value and exponents. We'll share from our experiences - including in Kindergarten and 8th grade classrooms - of using "Chip Trading" with our students.

SESSION 1   8:30 – 9:30

Number Talks Throughout the Grades   Elem, MS, HS
Stephanie Martin & Melissa Staloff
Warner Center for Professional Development & Education Reform at the Warner
School at the University of Rochester

Drawing on the work of Cathy Humphreys, Ruth Parker, Jo Boaler, and Sherry Parrish we will explore the power of Number Talks across the grade levels. Participants will walk away with an understanding of how Number Talks are structured and can be implemented in the classroom. We will engage in Number Talks and will use video to develop and image of Number Talks in action in a classroom. Particular attention will be paid to Using Number Talks to encourage accuracy, flexibility, and efficiency in mathematical thinking and to support students in developing their mathematical identities and attitudes.

SESSION 2   9:40-10:40

Not your Grandpa;s (nor the CCSSM's) Constructions   HS, College
Steve West
SUNY @ Geneseo, Retired

In this session we will investigate several advanced compass and straightedge constructions. The goal of an advanced construction problem is not to simply apply elementary compass and straightedge constructions, it is actually a problem solving exercise. It objective is to develop skills in the analysis of the problem and to illustrate the application of a wide variety of theorems. Once the analysis is complete we will use the TI-Nspire tools to illustrate the constructions.

TI-Nspire- The next steps: Get the most out of your TI-Nspire   HS
Diane Broberg
Allendale Columbia School

Participants will actively engage in activities that allow them to gain skills when using the TI-Nspire in the classroom. Skills can be applied to many lessons.

Differentiated Math Classrooms in Action   MS, HS
Nicole Quick & Angela Messenger & Jessica Colavecchia
Eastridge High School

Developing materials for differentiated lessons with varied levels of learners can take a lot of time. Technology and digital tools make it easy to differentiate instruction and create materials for all levels of learners. Attendees will learn a variety of ways to use technology to differentiate instruction. Samples of differentiated lessons for all grade levels will be provided including student artifacts and student testimonials of how differentiated classrooms have helped them become more engaged learners.

Comparing Groups via Simulation   HS
Barney Ricca
St. John Fisher College

Which of two possible medical treatments should we choose? Are there gender differences between two different groups of students? Many of our decisions involve situations in which we want to compare outcomes (e.g., successful vs. unsuccessful medical outcomes) in different approaches (e.g., surgery vs. physical therapy). Still others involve comparing sub-groups (e.g., number of boys vs. girls) in different groups (e.g., AP courses vs. Regents courses). In these situations, conditional probabilities, and simulations of those, can lead to answers. Using both graphing calculators and an online resource (available through any browser), we will use simulations to provide numbers that we can use to answer many questions in conditional probabilities and decision-making.

Mastery Grading!   HS, MS
Have your students chase learning, not grades.
Ryan Horst
Victor Central School

Learn how to implement mastery grading in almost any style learning environment. The goal is to show you a grading system that you can implement now and have the students focus on learning and not grades.

SESSION 2   9:40-10:40

Lies, Damn Lies, and Middle School Statistics   MS
Andy Mitchell
Wayne-Finger Lakes BOCES

Does teaching statistics make you M.A.D.? Are you wondering what will change when the Next Gen Math Standards are implemented? Come to this interactive session to review best practices for the current grades 6-8 statistics and probability standards and an overview of changes to come.

Empowering Student Voice in the Elementary Math Classroom   Elem
Jessica Sheridan
Wayne-Finger Lakes BOCES

"Would you want to spend the whole day learning in your classroom?" I recently heard international education consultant and author George Couros ask this question at a conference I was attending. My first impulse was to say, of course! However, as I reflect back on my time as an Elementary classroom teacher, there were moments in which I would have to say no, I would not want to spend the whole day learning in my classroom. That realization shook me. This session will focus on how we can empower our Elementary level students to have a voice in their own learning. Participants will have the opportunity to embark on pathways of their choice to view ideas for how we can support our students to take control over their own learning, while still following the NYS Math Learning Standards and district level curriculum guidelines.

SESSION 3   10:50-11:50

Angles and Circles: HS
A Constructivist Approach using 360° Protractors
Craig Smith
Brighton High School

It's the last week before the Geometry Regents exam and time to memorize those circle properties! Or not. Instead, I have my students discover the rules for themselves, using circles printed with 360 degree protractors. In this presentation you will have an opportunity to do this for yourself and walk out with a unit that you can use in your own classroom. I will also discuss GeoGebra options covering similar material, well-suited for a classroom with 1-to-1 devices.

Tips & Tricks for Testing MS, HS

Diane Broberg
Allendale Columbia School

Participants will investigate methods to help students perform better on high-stakes testing. Methods can apply to SAT, ACT, AP, and state tests.

The Rochester Math Teachers' Circle - Gen
Last Mathematician Standing

Matt Thomas & Nicole Juersivich
Ithaca College & Nazareth College

In our presentation, we will describe the Rochester Math Teachers' Circle. We will explain what a typical math circle session is like, and give examples of some of the problems that are done in a math circle. Come join in discovering what a math circle is all about!

Exploring linear and quadratic functions with the HS
TI-84 Plus CE graphing calculators

Miriam Santana-Valadez
National Technical Institute for the Deaf at RIT

In this presentation we will learn how to create animations of linear and quadratic functions; look for patterns in tables to identify functions; find the equation of a line using different strategies; solve equations and test for students' understanding using calculator games (apps). We will use several of the TI-84 Plus Ce graphing calculator features such as Transformation Graphing App, Quick Plot, and the Equation Solver.

Surprising Probabilities HS

Barney Ricca
St. John Fisher College

What do the World War II "Enigma Machine", a TV game show, false positives in medical testing, and an 18th century minister have in common? The answer is a particular extension to conditional probabilities, named after the 18th century Reverend Thomas Bayes. Long pushed to the side of statistics and probability, Bayes' rule has become a useful tool in many fields of science and beyond. In this session, we will explore how to work with these conditional probabilities, use graphing calculator simulations to check our conclusions, and find some surprising results. Along the way, you will deepen your own understanding of how to teach conditional probabilities and assist students in making decisions based on probabilities.

SESSION 3   10:50-11:50

Using Google Apps to Strengthen Math Instruction   MS, HS, College

Andy Maillet & Erick Mock
Webster Thomas High School

Participants will discover new and engaging ways to use Google Apps, Extensions, and Add-ons for teaching and learning in the math classroom. You will leave this workshop with many tools, activities, and handouts to bring back and use in your classroom and school.

Taking the Number Line Off the Wall   Elem

Kari Hamelinck
Lincoln School

In our schools our number lines are often found on the walls of the classroom. This workshop will examine number lines as a manipulative and interactive tool that helps students build number sense. We will experience some mini lessons incorporating interactive number lines for basic elementary number sense and work our way up through 2nd -5th grade standards of place value, rounding, fractions, and decimals.

Keynote Address   1:00-1:45

"Remember when you thought math was fun?
Let me remind you!"
Matt Koetz, Ph.D.

Playing with open-ended problems is often a great way to learn about mathematics. Problems that we can tackle with different strategies, look at from different angles, flip, fold, and turn inside out are the ones we want to stick with and keep working on. We explore several "classic" problems that are accessible to almost anyone, are interesting and fun to play with, but hide much deeper mathematics, and can therefore teach us a lot. We also introduce other activities that encourage persistence and promote discovery. Be prepared to play with simply stated yet challenging problems, and hopefully learn something new!

Matt Koetz is an Associate Professor and Chair of the Math Department at Nazareth College, and is the advisor of the Nazareth College Math Club. His interests include inquiry-based learning, graph theory, and the history of mathematics. He firmly believes that behind any good math is a good story.

SESSION 4   2:00-3:00
Forums
Do you have a topic that you'd like ideas for? Do you need some guidance teaching a new topic? Are you really excited about a lesson that you taught and want to share it? Our forum facilitators will lead groups through productive discussions. Join us for an hour of networking, problem solving, and sharing.
- Elementary
- Middle School
- Geometry
- Algebra I
- Algebra II
- College

Joseph Ahl

Joseph Ahl has been teaching Math at Fairport High School for the past 12 years. He is recently a nationally board certified teacher, a member of the NYS Master Teacher Program from the Finger Lakes Region, and also has coached volleyball and been an advisor to student council. Joe received his Bachelors from SUNY Geneseo and his Masters from SUNY Brockport. Joe enjoys playing golf with Kevin and plays in recreational volleyball leagues. Joe lives in Fairport with his math teacher wife Audra (married on pi day), his three year old Elodie and 9 month old twins Mason and Avery.

Diane Broberg

Diane has taught math for 24 years, the last 18 at Allendale Columbia School. She is a regional instructor for Texas Instruments, which allows her to impact math education through helping teachers use technology to enhance learning in the classroom. She does numerous presentations and professional development around the country. She is the mother of 2 girls and an avid runner.

Jessica Colavecchia

Jessica is a certified math teacher and has been teaching algebra in the East Irondequoit Central School District located in Rochester, NY for 10 years. She also holds a Master's Degree in Educational Technology and has spent that last three years of her teaching focusing on ways to enhance student learning in a 1:1 digital setting. She is currently working towards her certificate in K-12 Leadership at the University of Rochester. Jessica has presented about digital learning and standards based grading at multiple conferences within her district. She is passionate about digital conversion and leveraging technology to develop digitally rich teaching and learning experiences that promote critical thinking skills and collaboration.

Kari Hamelinck

Kari is currently an instructional coach in two primary buildings working with Pre-K-Second Grade students and staff. She has taught in the classroom at the Pre-K, Kindergraten and Third Grade Levels and has been an instructional coach for the last 3 years working at the intermediate and primary level.

Ryan Horst

Ryan has been teaching Math in both middle and High School for 15 years. He started his teaching career in the Bronx, then moved upstate 12 years ago.

Nicole Juersivich

Nicole earned her B.S. in Mathematics at Salisbury University, M.S. in Mathematics at Virginia Tech, and Ph.D. in Mathematics Education from the University of Virginia. She teaches mathematics and mathematics education courses at Nazareth College. Her interests include mathematical problem solving and thinking, and the use of technology to enhance teaching and learning.

Kevin Laley
Kevin has been teaching Math and Computer Science at Fairport High School for the past 10 years. He is a nationally board certified teacher, a member of the NYS Master Teacher Program from the Finger Lakes Region, and also teaches in the Nazareth College Summer Start program. Previously, he received his Bachelors from Nazareth College and his Masters from the University of Rhode Island. Kevin enjoys playing golf and running in his free time, and lives with his wife Mattie in Churchville.

Andy Maillet
Andy is an Assistant Principal at Webster Thomas High School. He earned his Bachelor's and Master's degrees from Niagara University in Secondary Math and Special Education and a Doctorate from the University of Rochester in Educational Leadership. He has served as a high school math teacher, an instructional math coach, and the coordinator of an alternative Middle School.

Stephanie Martin
Stephanie is the director of mathematics education outreach in the Center for Professional Development and Education Reform where she supports area schools in their efforts to provide research-based mathematics instruction. She teaches courses in the mathematics teacher preparation program. Martin brings 20+ years of classroom and professional development experience as an elementary and special education teacher. She coordinates and facilitates professional learning as well as provides content-focused coaching to teachers in the region.

Angela Messenger
Angela Messenger is a certified math teacher and has been teaching Algebra in the East Irondequoit Central School Districts located in Rochester, NY for 7 years. She holds a Master's Degree in Math, Science, and Technology from St. John Fisher College and a Bachelor's Degree in Mathematics from Nazareth College. She has spent that last three years on of her teaching focusing on ways to transform instruction and enhance student learning in a 1:1 digital setting. She has also presented about digital learning and standards based grading at multiple conferences within her district. She is passionate about digital conversion and leveraging technology to develop digitally rich teaching and learning experiences that promote critical thinking skills and collaboration.

Andy Mitchell
The best teachers steal stuff. Andy is an expert thief who loves math.

Erick Mock
Erick has taught math at Greece Athena High School for the past 14 years. He earned his Bachelor's and Master's degrees from Niagara University in Secondary Math and Special Education. He has worked with his professional learning community (PLC) to design the common core curriculum for Algebra 1 and Algebra 2.

Seth O'Bryan
Seth is the Commons director and math teacher at The Harley School.

Nicole Quick
Dr. Nicole Quick is a certified math and special education teacher. She completed her doctorate degree in Teaching and Learning with a research focus on student learning in 1:1 classrooms. Nicole has twelve years of experience teaching math/special education. Recently, she became the Instructional Technology Specialist for grades 9 – 12 in the East Irondequoit Central School District. She presented about standards-based grading and digital resources at Alan November's Building Learning Communities in July 2017, as well as another session at the same conference on digital engagement and collaboration. Nicole presented at the Building Learning Communities conference in July 2016 on Classroom Management using Digital Tools and will be presenting multiple sessions in July 2018 as well. Nicole has also presented about digital engagement and standards based grading at the annual digital symposium hosted by her school district.

Barney Ricca
Barney is in his 11th year of teaching at St. John Fisher College, and is the Director of Statistics and Data Sciences there. Prior to assuming that role, he directed the Graduate Mathematics, Science, and Technology Education Program at Fisher. He has been involved in STEM teacher education as a college/university professor for over 20 years, and has taught middle and high school mathematics, computer science, and science in Dallas, TX and Chicago, IL. As a senior, he participated in the last season of high school slide rule competitions in TX.

Bob Rogers
Bob Rogers is a SUNY Distinguished Teaching Professor of Mathematics. He is a Past President of AMTNYS, former Chair and Governor of the MAA Seaway Section, and former Editor of the NYS Mathematics Teachers' Journal. He is currently a member of the governing board for the NYS STEM Education Collaborative.

Barbara Sadler
Barb is currently in her 19th year of teaching mathematics at the Aquinas Institute. She formerly taught at Canisius High School in Buffalo for 10 years and at Siena Catholic Academy for 3 years. She is an active member of AMTNYS and AMTRA.

Paul Sadler
Paul has retired from McQuaid after teaching mathematics courses for 47 years. He is an active member of AMTNYS and AMTRA.

Miriam Santana
Miriam is a National Board Certified Teacher and a Mathematics Instructor at the National Technical Institute for the Deaf (NTID) where she teaches mathematics in American Sign Language (ASL). She has 24 years of teaching experience: 9 in her native country Mexico, 4 in the Rochester City School District teaching regular and bilingual groups, and the last 11 years teaching mathematics to deaf and hard of hearing students at NTID. Miriam has been a T3 Instructor since 2007. Her teaching philosophy "Make mathematics accessible to ALL through the use of Technology". "… I always believe in the students and my goal is to make them independent thinkers and learners".

Scott Schaefer
Scott is a Kindergarten math teacher in the Honeoye Falls-Lima CSD. He co-advises the Model United Nations club, and has taught fifth grade and gifted education as well as Introductory Chinese. Scott writes 8-page books for emergent readers and has recently started to play ukulele in his classroom.

Jessica Sheridan
Jessica is the Director of Staff Development for Wayne-Finger Lakes BOCES. This is Jessica's 5th year supporting PK-12 teachers and administrators in the Wayne-Finger Lakes region. Prior to becoming the Director, Jessica served as the PK-12 Coordinator of Regional Math Initiatives. She is currently a member of the New York State Staff/Curriculum Development Network and the S/CDN Math Professional Development Framework committee. Prior to her work at BOCES, Jessica was an elementary teacher and mathematics coach for the Canandaigua City School District. She is a graduate from Mansfield University and Nazareth College. Jessica also holds her SBL and SDL leadership certificates from the University of Rochester. Jessica's goal is to provide strategic support to educators so that students can experience up-to-date best practices in education and become true advocates for their own learning.

Craig Smith
Craig is a math teacher at Brighton High School and an adjunct instructor at the Rochester Institute of Technology. He is a New York State Master Teacher in the Finger Lakes Region and a National Board Certified Teacher. Craig has more than two decades of experience teaching math, statistics, computer science, and economics at the high school and college level. He lives in Brighton with wife, five children, mother-in-law, and two tortoises.

Melissa Staloff
Melissa is an associate director of mathematics education outreach in the Center for Professional Development and Education Reform. Staloff works with local schools to support teachers in providing research-based mathematics instruction. As a component of this work, she facilitates professional learning and engages in content focused coaching with area teachers. She comes to the Center with over a decade of experience teaching high school mathematics in the Rochester area. During that time, she taught using research-based curricular materials and facilitated professional learning locally.

Matt Thomas
Matt is an assistant professor in the mathematics department at Ithaca College.

Jordan Titus
Jordan teaches 7th/8th grade math in the Hornell CSD, coaches boys modified soccer, and co-advises the Academic All-Stars team at Hornell High School. He incorporates hands-on experiences as a foundation for abstract algebra concepts, and he tries to motivate learning through interesting new problems that create a need for more developed ideas and new procedures.

Steve West
Dr. West is a life-long mathematics educator. He earned his B.S. in Mathematics at SUNY Oswego and M.A.T. in Mathematics from Rutgers University and Ph.D. in Mathematics Education from the University of Texas at Austin. After receiving his Ph.D., Dr. West moved to SUNY Geneseo where he held a faculty position in the Mathematics Department. During his nearly 30 years at Geneseo he taught graduate and undergraduate mathematics courses, mathematics methods and coordinated the highly successful secondary mathematics certification program. While in the Mathematics Department he served as chair and was promoted to the rank of Distinguished Teaching Professor of Mathematics. He has been a member of Association of Mathematics Teachers of New York State for over 40 years, serving as its 38th president and as the editor of the New York State Mathematics Teachers' Journal. In his retirement, Dr. West is a T3 National Instructor and continues to do mathematics, work on his old cars, read avidly and most importantly, watch his ten grandchildren grow!