

Metropolitan Mathematics Club of Chicago

# CONFERENCE OF WORKSHOPS

Register online at www.mmcchicago.org

Saturday, January 26, 2019

University of Chicago Laboratory Schools Chicago, IL

INCLUDING

FREE BONUS POST-LUNCH SESSION!!! (See inside for details.)

FOR TEACHERS OF ALL GRADES K-14

# The Metropolitan Mathematics Club of Chicago invites you to attend its

# **Conference of Workshops**

A conference in workshop format, given by teachers for teachers, with sessions for K-College.

Saturday, January 26, 2019 The University of Chicago Laboratory Schools Chicago, IL

# PDH available

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Metropolitan Mathematics Club of Chicago

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#### MMC CONFERENCE OF WORKSHOPS PROGRAM

- 7:45 8:30 Pick up registration packets (No on-site registration)
- 8:30 9:45 Session One
- 10:00 11:15 Session Two
- 11:30 12:45 Session Three
- 12:45 \*Lunch (optional/prepaid)
- 1:30 2:45 FREE Bonus Session (optional)

#### \* Additional fee required

# Individuals may register online and pay with a credit card at www.mmcchicago.org.

Groups with a single check must complete an individual registration form for each participant and pay by mail. No purchase orders can be accepted.

#### For registration information, please contact:

Peter DeCraene	847-424-7415
	mmcconfregistrar@gmail.com

For conference information, please contact:

Nicolette Norris	708-557-3580 nickianorris@gmail.com
Rose Sterr	630-648-0984 rsterr@benet.org

# MMC Conference of Workshops 2019

## The University of Chicago Laboratory Schools 1362 E 59<sup>th</sup> St Chicago, IL 60637

\*\*Do not mail registrations to the above address.

Register online at www.mmcchicago.org or mail to the address on the registration page. Registration deadline is January 9, 2019.

# Workshop placement will be done in the order in which registration is received, so register early!

Your workshop information will be emailed by January 20, 2019.

Reminder: this conference is by pre-registration only – there is no on-site registration.

Join us in the cafeteria for breakfast treats from 7:45 – 8:30 a.m.

### SESSION ONE

#### 101 COVER 60% OF MATH CONTENT IN K-3 WITH JUST ONE GAME – GO/WEIQI

#### Xinming Guo, Xiuwen Wu

During this hands-on session, attendees will learn how to play Go game and integrate it into math classrooms. Participants will observe video clips from classrooms to evaluate the relationship between Go and Math standards. Suggestions will be provided on how to use Go in math classrooms.

#### 102 USING COOPERATIVE LEARNING STRATEGIES TO PROMOTE MATH DISCOURSE

#### Annie Bacol, Lizzie Scott

This workshop will demonstrate how to incorporate cooperative learning strategies in math instruction to promote math discourse. Teachers will learn how to encourage students to work together on common tasks, and talk about math in a way that shares their understanding of concepts.

#### 103 STRUCTURES FOR THOUGHT: DEVELOPING STUDENTS' MATHEMATICAL MODELS

#### Sylvia Glassco

Mathematical models, which students first use to record strategies, soon become tools for new thinking that shape understanding. Work with carefully selected K-6 contexts, exploring how they generate models such as the number line or ratio table and how these models can grow with students.

#### 104 BACK TO BASICS: MATHEMATICAL PLAY Lindsey Herlehy

Our youngest students are curious and creative with the skills and practices needed to be successful mathematicians. Engaging in play, students naturally take risks and pursue their own questions. Research shows this practice is beneficial for all students, regardless of grade level. So, let's play!

#### К-5

K-3

K-6

K-8

## 105 THE 100 CHART- NOT JUST A WALL ORNAMENT!

Janelle Chisholm

1-2

Join us to see how to use the chart to add and subtract with and without regrouping! You will be amazed at how easy it is to use. Your students will LOVE this strategy and beg for more math!

#### 106 GEOMETRY! (KEEPING OUR STUDENTS IN <u>SHAPE</u>) Katie Courtney

2-6 classroom?

Do you have tangrams, pentominoes, or pattern blocks in your classroom? Do you use patty paper to construct properties of shapes? Do you have games to help students see shapes, symmetry, sets, and area? All of this and more will be covered in this fun hands-on workshop.

#### 107 REACHING ALL STUDENTS IN MATH THROUGH DIFFERENTIATION Sara Curran 3-5

Modify your instruction to accommodate all learning styles and ability levels, using engaging, differentiated strategies. Songs, sayings, visual cues, leveled activities, enrichment opportunities, and helpful resources will be shared to promote understanding, retention, and growth for all learners.

#### 108 FRACTIONS ARE NUMBERS TOO!

#### Annie Forest

3-7

Oh, fractions. Many students say they hate them. Sometimes fractions can even be our least favorite to teach. Let's change that! I'll share my best discovery activities for understanding benchmark fractions, placing them on the number line, and getting the fraction talks going in your classroom!

#### 109 PERCENTS THAT DON'T MAKE SENSE

#### **David Spangler**

Uncover errors involving percent based on situations from newspapers, ads, and public figures. The examples — often humorous — illustrate common misconceptions while making the point that the errors students make in class are often repeated by the same people as adults in the real world of work.

#### 110 MATH ENRICHMENT FOR ALL

#### Douglas O'Roark, Matthew Moran

Math Circles of Chicago is the largest free math circle in the world. In the last 3 years MC2 has expanded to 7 sites and serves 640 students. We do novel, fun, engaging math with a diverse group of kids. Experience 1 or 2 of our activities, learn about our organization, and how you can participate!

#### 111 TEACHING ALGEBRA IS HARD!

#### Sheila Hardin, Christine Mondragon

Algebra is often called a gateway course but we still struggle with getting it "right." In this workshop we will provide activities designed to engage students and provide a strong curriculum.

#### 112 THE SECRETS OF CIRCLES George Marino

By cutting, pasting, and folding paper models, you will discover the secrets of circles. The goal is to put the action on the student's desk. The emphasis is on what the student does. We will view math as simple, natural, obvious, and yet profound.

#### 5-10

#### 6-10

5-12

#### 113 COLORING, PARTY INVITES, FISH TANKS, AND SCHEDULING Mary McMahon

Coloring is a stress reducer. Let's look at the mathematics of coloring: Camille Jordan's Two Color Theorem, Four Color Problem, maps, vertex graphs, party invitations, fish tanks and scheduling. A discrete mathematics topic appropriate for middle school through college.

#### 114 DRIVING ON MARS: A CODING PROBLEM Curtis Brown

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

#### 115 MATH TEAM PROBLEMS YOUR STUDENTS (AND YOU) SHOULD KNOW HOW TO DO!

#### Michael Caines, Kevin Lee

Hey, you! You like doing math problems, right? Well, come do some math with us. We'll work through some classic problems and learn the reasoning behind the "tricks." You can take these problems back to your team or to your classroom. Our talking will be minimal; the focus will be on the math.

#### 116 WHAT COMPUTER-AIDED DRAFTING TELLS US ABOUT TEACHING GEOMETRY

#### Susan Brown

Many people with jobs applying the geometry we teach (engineers, architects, mechanics and drafters) use drafting in their training and work. What topics do they use the most? What do those applications look like? Do they apply to the classroom? I'll share what I learned taking an AutoCAD course.

#### 6-14

7-12

7-12

#### 117 BREAKING THE ICE WITH NEW GROUP TEAM-BUILDERS Cory Gilroy

Participants will engage in many team-builders designed to encourage conversations between students and lead towards stronger mathematical comprehension. Tips on how to form new groups - composition of students, frequency of changes, how to communicate new groupings, etc. - will also be shared.

#### **118** BREAKOUT EDU

#### Kari O'Leary, Grace Twietmeyer

Breakout EDU is the education version of an "Escape Room" in which students are given clues to break into a box. Students work in groups to piece together clues in order to open locks on a box. Breakouts teach teamwork, problem solving, critical thinking, and troubleshooting. Come have some fun!

#### 119 MODELLING IMPORTANT SOCIAL ISSUES: OPIOID OVERDOSE DEATHS IN THE U.S.

#### **Tom Reardon**

Have your students mathematically model this shocking real data from 2000 on. Discover how to create functions to model data for interpolation and extrapolation, calculate percent change. Obtain all materials: data, student worksheets, teacher notes and solutions, and a detailed step-by-step blog.

#### 120 EXPECTING THE UNEXPECTED

#### Steve Viktora, John Benson

We will look at unexpected classroom experiences that have led to great mathematics.

#### 8-12

8-12

#### 8-12

#### 121 WHAT'S WRONG WITH THIS PICTURE?

Richard Agin, Andrew Mauer-Oats

Fun with fake proofs, wrong thinking, and other really bad ideas. Come and learn that all cows are brown, all triangles are isosceles, and, of course, 0=1. We'll look at some classic mathematical fallacies and other fun pitfalls and paradoxes for students and teachers alike.

#### 122 PLAYING WITH PRECALCULUS Shelley Bonner

Looking for ways to bring games and interactive ideas to the classroom? Join me as we play with candy, the unit circle, and polar coordinates! Walk away with activities to use in your classroom on Monday!

#### 123 CHOOSE YOUR OWN ADVENTURE?

#### **Neva Curry**

Look at how Google Forms can be used for review in a style of "choose your own adventure" format. Participants will be able to work through an already created review to see how it is used to guide students' review process and then will be able to attempt creating their own.

#### 124 DIFFERENTIATING THROUGH CO-TEACHING: WORKSHOPS & PEER COACHING

Chelsea Moorman, Samantha Nieto, Venetia Colon9-12Defrontize your classroom with a workshop model of instruction and peercoaching. Teachers will know when to implement workshop modelinstruction, how to structure a math workshop, how to track data fromsmall group instruction, and next steps after workshops (peer coaching).

#### 9-12

9-12

### 125 ADVICE FOR NEW TEACHERS FROM NEW(ISH) TEACHERS

Tina Nocella, Gary Chu

How do I establish classroom climate? Where do I find ideas and resources? Why are we teaching that? How do I reach all students? When do I have time for me? If you want answers to any of these questions (or others), come and join us for a conversation meant to support our newer life-long learners.

#### 126 USING DESMOS IN CALCULUS Martha Mulligan

I'll share how I use desmos.com and teacher.desmos.com in Calculus in order to increase student agency, to enhance discourse, and to see how cool calculus is. Bring a large screen device so you can play, too!

#### 127 SCITSITATS PA: THAT'S AP STATISTICS FLIPPED!

#### Candice Sagliano, Ben Bishop

Flipped course = quadrupled enrollment. Last year, 78.9% of 109 test takers earned a 3+. We now have 229 students in 10 sections. Attendees will do activities, make an EdPuzzle video, and receive electronic copies of our curriculum. We will also discuss advertising techniques to increase enrollment.

#### 128 INTRODUCTION TO THE LaTex DOCUMENT PREPARATION SYSTEM Frank Briody 9-16

Come explore the LaTex document preparation system. Learn how this well-documented, time-tested, open-source plain text language can create beautiful mathematical documents, presentations and graphics. If you are looking to replace expensive, quirky, single platform software, here's the answer.

9-14

# Join us for refreshments in the cafeteria between sessions!





MMC Conference of Workshops

#### 201 DEVELOPING STUDENTS' MATHEMATICAL MODELS

#### Sylvia Glassco

Mathematical models, which students first use to record strategies, soon become tools for new thinking that shape understanding. Work with carefully selected K-6 contexts, exploring how they generate models such as the number line or ratio table and how these models can grow with students.

# 202 NCTM's 8 EFFECTIVE TEACHER PRACTICES: WHAT DO THEY LOOK LIKE?

#### Lisa Bernstein

NCTM outlined 8 research-based effective teaching practices that, when implemented regularly, "ensure that all students learn mathematics at high levels." Come explore what these practices look like in real classrooms and what tweaks can you make to your own practice to support student learning.

#### 203 "NO, REALLY ...... YOUR KIDS CAN DO THIS" – PROMOTING MATH IDENTITY

#### **Gavin Creaden**

"So, I'm really not a math person," they disclose, looking for some kind of validation from the "Math Guy." How and when did this mindset take hold of our people? In this session we'll engage in discussion around "identity" as well as play with 3-Acts to uncover ways to ramp up student "agency."

#### 204 BACK TO BASICS: MATHEMATICAL PLAY Lindsey Herlehy

Our youngest students are curious and creative with the skills and practices needed to be successful mathematicians. Engaging in play, students naturally take risks and pursue their own questions. Research shows this practice is beneficial for all students, regardless of grade level. So, let's play!

#### K-6

K-8

К-8

K-8

#### 205 MATH TEACHER TWITTER

#### Annie Forest

Teachers are using Twitter to share ideas & connect. In fact, math Twitter is a pretty vibrant place! From making a profile, who to follow, how to share, participating in Twitter chats, and what is #MTBoS?! Join us to learn about Math Teacher Twitter! Bring your own device (phone/tablet/laptop)

#### 206 FACILITATING STUDENT DISCUSSION IN THE MATHEMATICS CLASSROOM

#### **Christine Droba**

In this session, participants will learn how to facilitate student discussions in whole class, small group, and partner settings. The session will also include how teachers can use technology to enhance these discussions.

#### 207 FRACTION NUMBERLINE: U CAN DO IT! Janelle Chisholm

3-5

2-5

Participants will make a fraction number line using a sentence strip and markers and then use it to compare fractions with like and unlike denominators and to add/subtract fractions. Your students will thank you!

#### 208 GOING BEYOND "HOW MANY ZEROS AND WHERE DO THEY GO?" Cathy Kaduk 3-5

Take home varied ways to help kids to comprehend Base 10 Place Value while adding, subtracting, multiplying and dividing whole numbers and decimals using hands on activities, calculations, think bubbles and interpreting stories.

#### K-16

#### 209 DON'T SLOW ME DOWN WITH THAT CALCULATOR: MENTAL MATH METHODS

#### Cliff Petrak

Let's change our usual bottom third finish in the global mental math competition. We'll derive and learn several computational mental math methods for multiplication and squaring. They're all faster than not only our slow algorithmic methods, but faster than a calculator as well!

#### 210 PERCENTS THAT DON'T MAKE SENSE

#### **David Spangler**

Uncover errors involving percent based on situations from newspapers, ads, and public figures. The examples — often humorous — illustrate common misconceptions while making the point that the errors students make in class are often repeated by the same people as adults in the real world of work.

#### 211 CLASSROOM ROUTINES FOR MAKING STUDENT THINKING VISIBLE

#### Jessica Hanzlik

Presenters will share routines and protocols used to have the entire class up and working at whiteboard spaces around the room.

### 212 ADAPTABLE ACTIVITIES IN ALGEBRA

#### Stacy Ambrozich, Julie Ozols

Participants will experience a plethora of hands-on review and discovery activities related to Algebra I through cooperative learning strategies, reflection, and experiments.

3-9

6-9

#### 6-12

#### 213 REFRAMING STUDENT STATUS

Kate Carter, Ginna Roach

Join us as we examine techniques for developing growth mindsets around math ability, focusing especially on disrupting math status hierarchies that develop in classrooms. We will share our strategies for building equitable math communities through small-group and problem-based learning.

#### 214 MAKING MATHEMATICS MEANINGFUL FOR ALL Jennifer Dao

Tired of hearing your students ask "what is the point of math?" Join me to discuss our journey as mathematics teachers, striving to make mathematics meaningful and relevant for our students while balancing the standards and skills. Student projects and resources will be shared.

#### 215 STRUCTURING MATH BLOCKS TO CLOSE THE FORMATIVE FEEDBACK LOOP

#### Anne Agostinelli

Do you feel as though the daily grind turns into a blur, and before you know it, a unit assessment is upon you but you're unsure about individual students' readiness? This year, I have been working on structures that promote student ownership of feedback. Come learn and share!

#### 216 RETHINKING ASSESSMENT: A SKILL WE DEVELOP <u>WITH</u> OUR STUDENTS

#### Scott Galson

How can we give students feedback on their learning process and on how they convey their understanding? Examine some strategies that guide our next actions as teachers--and students' next actions as engaged learners – before and after an assessment.

#### 6-12

6-12

7-9

7-12

8-12

8-12

#### The press these days is full of information about self-driving cars, travel to Mars and robots taking over our lives. In addition, many aspects of industry utilize robots, such as Ford building cars and Amazon packing, shipping and delivering packages.

#### 218 **CREATIVE ACTIVITIES, STRATEGIES, IDEAS TO PREP STUDENTS FOR** THE SAT

MATH AND CODING WITH THE LEGO MINDSTORMS ROBOT

#### **Tom Reardon**

Merle Green

We will provide interactive activities that align directly to the types of questions that are on the newly revised SAT. Obtain proven SAT test-taking strategies that encourage multiple solution paths. Goal: students learn and retain the math better, not just score better on the SAT!

#### 219 RATE OF CHANGE: FROM ALGEBRA TO CALCULUS **Curtis Brown**

Students' understanding of rate-of-change should evolve as they progress through mathematics. How can we build comprehension instead of memorization? We will explore several applied contexts to develop the concept for all students.

#### 220 CLASSPAD.NET: THE ALL-IN-ONE MATH TOOL

Ismael Zamora

Mathematics is not just graphing or calculating. Mathematics is problem solving using a variety of tools in new and unique ways. Come get an introduction to the only free, all-in-one math tool, classpad.net. We will explore the may ways it can be used to teach mathematics, including CAS, geometry, and statistics.

217

#### 222 REACHING ALL STUDENTS FOR SUCCESS IN GEOMETRY Rebecca Keller, Alisha Bhimji

Learn about our experience with combining Geometry levels this year. Our approach includes building a collaborative environment, offering choices, redesigning the structure of big concepts, and supporting students. We will share ideas for starting the year and specific differentiated activities.

#### 223 PARADOXES

#### John Benson

We will look at some situations that seem to be impossible. Bring your favorites.

#### 224 LET THE SUN SHINE! TRIGONOMETRY TO MODEL DAYLIGHT DATA Scott Knapp 9-12

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

# 221 TALK TO IT! USING LITERACY SKILLS TO BUILD PROBLEM SOLVING

When my students are stuck on how to complete a problem, I encourage them to talk to the problem! In this workshop, I will introduce the literacy framework I share with my students. Participants will experience problemsolving with this framework and learn how to use literacy in your classroom.

**Eric Anderson** 

9-12

8-16

#### 225 NOTECARDS TO THE RESCUE

**Blaire Rose Yoder** 

Try out a collection of no-prep and low-prep activities that get students up and moving that you can use in your math classrooms on Monday. All you need are some notecards!

#### 226 INVESTIGATE THE MEAN AND VARAINCE OF THE SUM OF RANDOM VARIABLES

#### Rosa McCullagh

In this session, suitable for teachers of AP Statistics, I will show activities used to demonstrate finding the expected value and variance of the sum or difference of two random variables, for both the independent and dependent cases.

#### 227 R-STUDIO ON CHROMEBOOKS AND iPADS Martin Butzen

Attendees will learn how to use the free rstudio cloud server with chrome books and ipads to run rstudio for R programming instruction for math and science curriculums. Information on how to setup a standalone rstudio server will also be provided if anyone is interested.

#### 228 10 OF OUR FAVORITE PROBLEMS FOR AP CALCULUS Mary Wiltjer, Sheila Hardin

Looking for some great problems for your AP Calculus class? This workshop is the place to be. We will go through 10 problems that will challenge your students while helping them master the topics. (In case you came to last year's workshop, all 10 problems will be new.)

## **9-12**

9-14

#### 9-16

**Remember:** 

Register early to have the best chance of getting your first choice of workshops. Final registration deadline is January 9!

Excited about MMC opportunities? Can't wait until January 26? Join MMC at one of our monthly dinner meetings. See the schedule on the inside back cover.



MMC Conference of Workshops

### **301 WHAT THE HECK IS A REKENREK?**

#### Janelle Chisholm

Come and build a Rekenrek and use it to solve all kinds of simple math problems. Your students will love using this beaded tool to compare numbers, compose and decompose numbers, add and subtract, and more!

#### 302 MATH UNPLUGGED

#### **Glory Jurich-Sarna**

Come and learn how to use everyday objects to make math manipulatives. These centers help teach conceptual knowledge, problem-solving skills, and practice numeracy. Make a manipulative or two for your grade level and walk away with ideas for more.

#### 303 GEOMETRY! (KEEPING OUR STUDENTS IN SHAPE) Katie Courtney

Do you have tangrams, pentominoes, or pattern blocks in your classroom? Do you use patty paper to construct properties of shapes? Do you have games to help students see shapes, symmetry, sets, and area? All of this and more will be covered in this fun hands-on workshop.

#### 304 REACHING ALL STUDENTS IN MATH THROUGH DIFFERENTIATION Sara Curran 3-5

Modify your instruction to accommodate all learning styles and ability levels, using engaging, differentiated strategies. Songs, sayings, visual cues, leveled activities, enrichment opportunities, and helpful resources will be shared to promote understanding, retention, and growth for all learners.

#### K-2

2-6

K-6

#### 305 COMPLEXITIES OF TRANSPORTATON – REAL WORLD PROBLEM SOLVING

#### Amy Nusser, Ruth Young

We will present our process and product of the curriculum developed through a partnership between District 65 and Northwestern University. The research involved finding more cost-efficient routes to get our students to school. It also examines the equity piece associated with the routes. A multi-tiered lesson plan!

#### 306 MATHPHOBIA: OVERCOMING YOUR STUDENT'S OR THEIR PARENT'S FEARS

#### Peggy Collings, Cari McCabe

There is no such thing as a "math person." The differences between students who excel in math and strugglers are preparation, persistence and self-confidence. Build that confidence in math-resistant students with techniques to build relationships, show connectedness and pique interest in math.

#### 307 MAKING FLUENCY MEANINGFUL IN MIDDLE SCHOOL Anne Agostinelli, Jennifer Mundt Leimberer

Are you looking for ideas to help your middle grade students develop deeper, more meaningful fluency with foundational content and skills, with room to stretch beyond those limits? Let's explore four variations on math talks that help create a purposeful path to fluency for students!

5-9

#### 308 THE TYRANNY OF THE AXES

#### **Steve Starr**

Student difficulties with graphs on the coordinate plane may be due to understanding coordinates in terms of a path from the origin as opposed a general understanding of left-right, down-up. See where this problem comes up, and ways to help students develop a richer sense of graphs on coordinates.

#### 309 THINKING MATHEMATICALLY FROM MINUTE 1: RESOURCES FOR WARM-UPS

#### Marissa Grayson

Engage students in warm-ups that push students to think mathematically about everyday situations with no risk and participate in productive math discourse. All activities promote the CCSS Math Practice Standards, use technology, support student ownership, and can be applied to your class tomorrow!

#### 310 USING A FLIPPED CLASSROOM WITH MATH WORKSHOP IN MIDDLE SCHOOL

#### Jillian Mackey

Using a flipped classroom model allows for math workshop in a class that meets less than 60 minutes. Learn how to restructure math classes to deliver instruction to small groups that includes differentiation to meet the needs of all students.

#### 311 ADAPTABLE ACTIVITIES IN ALGEBRA

Stacy Ambrozich, Julie Ozols

Participants will experience a plethora of hands-on review and discovery activities related to Algebra I through cooperative learning strategies, reflection, and experiments. Many of the activities can be adapted to middle school content and Algebra II.

#### 5-10

5-12

6-8

#### 312 STAR POLYGONS AND MODULAR ARITHMETIC QUILTS

#### Jackie Murawska

SESSION THREE

Create star polygons and modular arithmetic quilts to investigate number theory, symmetry, transformations, and group theory using art. Advanced topics often reserved for college can be weaved into middle and high school curricula to help students see mathematics as a unified body of knowledge.

#### 313 MATH AND CODING WITH LEGO MINDSTORMS ROBOT Merle Green

The press these days is full of information about self-driving cars, travel to Mars and robots taking over our lives. In addition, many aspects of industry utilize robots such as Ford building cars and Amazon packing, shipping and delivering packages.

#### 314 INTRO TO DESMOS

#### Joe Karlovsky

You've heard about it for years - it's time to finally check it out! Very userfriendly, there is a lot of rich mathematics to be discovered by teachers and students alike. Brand new users welcome and encouraged!

#### 315 HOW TO DESIGN PROGRAMS WITH PICTURES - CS Andrew Mauer-Oats

This is a computer science workshop (Not AP/Java). Beautiful pictures and interesting animations line the route to understanding functions. Come make an art project on the computer and find out how to teach planning ahead with tangrams. Make an animation in a team; try out the process with a real objective.

#### 6-12

7-12

#### 7-12

#### 316 MODEL MATHEMATICAL DATA FROM CLIMATE REALITY PROJECT TRAINING

#### **Tom Reardon**

Obtain the most current data and information about climate change, its causes and consequences. Have your students model this significant data using the mathematics that they are studying. Obtain all materials: data, student worksheets, teacher notes and solutions, and a detailed step-by-step blog.

#### 317 MY FAVORITE COOPERATIVE LEARNING STRATEGIES Beth Ann Ball

Are you making your classroom more cooperative? Are you looking for structures to insure individual accountability and cooperation? This workshop will provide you with some activities you can use this week in your mathematics classroom.

#### 318 CUMULATIVE TESTING: REVIEW, RETHINK, RETAIN Kristen Logas, Rebecca Schwartz

This workshop will help participants rethink their testing structure from unit exams to bi-weekly exams which use spiraling as a method for retention. Participants will be supported in making review videos, guides, and exams to best reach all students as they master a mathematics course.

#### 319 READY, SET, MATH! Beth Runkel

The game of SET serves as an entry into investigating math from disciplines such as Discrete Math, Linear Algebra, and Probability and Statistics. SET math engages students and can be geared to meet their individual needs. You will leave with ideas of how to incorporate SET math into your lessons.

#### 8-12

#### 8-12

8-12

#### 320 A LOOK AT SOME FUN AND AMAZING GEOMETRY THEOREMS Ray Klein

We will use the TI-Nspire to explore some FUN and AMAZING theorems. These theorems are not ones usually covered in a standard Geometry course, but they are easy for students to discover on their own. We will give proofs of some of these amazing theorems and simply marvel at some of the others.

#### 321 LESSON STUDY FOR HIGH SCHOOL

#### Matthew Rosenberg, Erin Unander

Lake View High School has embarked on a series of Lesson Study cycles to examine classroom practices, build a culture of collaboration, and to hold authentic conversations about instruction. Learn about the practice of Lesson Study, the benefits, and the impact on instruction and the department.

#### 322 MATHEMATICS KNOWLEDGE FOR TEACHING Steve Viktora

In a class about special angles a student asks how to find sin 32°. What math do you need to know to respond? We will explore similar situations in teaching high school math.

#### 323 THE POWER OF MULTIPLE REPRESENTATIONS WITH PRIZM CAS Ismael Zamora 9-12

The PRIZM CAS is a touchscreen-based math tool that allows students to explore many aspects of math on multiple screens. The interaction allows students to learn how math is interconnected. We will solve problems that are better explored through multiple representations.

#### 9-12

9-12

#### 11:30 - 12:45

#### 324 THE POWER OF GENERALIZING AND SPECIAL CASES IN PROBLEM SOLVING

#### **Chris Jeuell**

9-16

This session will focus on two powerful strategies in problem solving. Many people who struggle with solving novel problems find that these strategies lead to important breakthroughs and deeper understanding of the mathematics. We'll look at a broad variety of problems, including contest problems.

#### 325 EXAMING PRODUCTIVE STRUGGLE THROUGH RECURSSIVE SEQUENCES

#### **Daniel Kang**

10-12

11-14

11-16

In this workshop we will re-engage as students of mathematics, looking at recursive and Fibonacci sequences, and reflect on what a teacher can do to promote and maintain the productive struggle.

#### 326 ELEMENTARY APPROACHES FINDING VOLUMES AND SURFACE AREAS OF A SPHERE

#### Wenjiang Tu

This workshop will present two sets of independent proofs for the volumes and surface areas for all the related geometric objects, such as spherical cap/segment/zone in a sphere. The proofs only require an integration of algebra, geometry, trigonometry, and series concepts without calculus.

#### 327 IN AP CALCULUS .... A PICTURE IS WORTH 1000 WORDS! Scott Knapp

Come explore activities and technology demonstrations that have helped students VISUALIZE and make connections with challenging AP Calculus concepts. Topics include: limits, the limit definition of the derivative, f/f'/f" graphing relationships, integrals, Riemann sums, area/volume, and motion.

## LUNCH WILL BE SERVED IN THE CAFETERIA FOLLOWING SESSION THREE FOR THOSE WHO PRE-REGISTERED FOR LUNCH.

## CHOOSE THE LUNCH OPTION WHEN REGISTERING TO JOIN US FOR LUNCH.

EVERYONE IS WELCOME TO THE FREE POST-LUNCH SESSION AT 1:30 DON'T MISS IT!

MMC Conference of Workshops

Free Post-Lunch Special Session

# 1:30 - 2:45

See each of these six speakers share (in 10 minutes precisely) their favorite idea, lesson, or activity.

- Annie Forest
- Scott Knapp
- Douglas O'Roark
- Candice Sagliano
- Esther Song
- David Spangler

## No choices to be made! See all 6!

# MMC CONFERENCE SPEAKERS 2019

Richard Agin	121	Xinming Guo	101
Anne Agostinelli	215, 307	Jessica Hanzlik	211
Stacy Ambrozich	212, 311	Sheila Hardin	111, 228
Eric Anderson	221	Lindsey Herlehy	104, 204
Annie Bacol	102	Chris Jeuell	324
Beth Ann Ball	317	Glory Jurich-Sarna	302
John Benson	120, 223	Cathy Kaduk	208
Lisa Bernstein	202	Daniel Kang	325
Alisha Bhimji	222	Joe Karlovsky	314
Ben Bishop	127	Rebecca Keller	222
Shelley Bonner	122	Ray Klein	320
Frank Briody	128	Scott Knapp	224, 327
Curtis Brown	114, 219	Kevin Lee	115
Susan Brown	116	Kristen Logas	318
Martin Butzen	227	Jillian Mackey	310
Michael Caines	115	George Marino	112
Kate Carter	213	Andrew Mauer-Oats	121, 315
Janelle Chisholm	105, 207, 301	Cari McCabe	306
Gary Chu	125	Rosa McCullagh	226
Peggy Collings	306	Mary McMahon	113
Venetia Colon	124	Christine Mondragon	111
Katie Courtney	106, 303	Chelsea Moorman	124
Gavin Creaden	203	Matthew Moran	110
Sara Curran	107, 304	Martha Mulligan	126
Neva Curry	123	Jennifer Mundt Leimberer	307
Jennifer Dao	214	Jackie Murawska	312
Christine Droba	206	Samantha Nieto	124
Annie Forest	108, 205	Tina Nocella	125
Scott Galson	216	Amy Nusser	305
Cory Gilroy	117	Kari O'Leary	118
Sylvia Glassco	103, 201	Douglas O'Roark	110
Marissa Grayson	309	Julie Ozols	212, 311
Merle Green	217, 313	Cliff Petrak	209

Tom Reardon	119, 218, 316	Steve Starr	308
Ginna Roach	213	Wenjiang Tu	326
Blaire Rose Yoder	225	Grace Twietmeyer	118
Matthew Rosenberg	321	Erin Unander	321
Beth Runkel	319	Steve Viktora	120, 322
Rebecca Schwartz	318	Mary Wiltjer	228
Lizzie Scott	102	Xiuwen Wu	101
Candice Sagliano	127	Ruth Young	305
David Spangler	109, 210	Ismael Zamora	220, 323

#### **Acknowledgements**

University of Chicago Laboratory Schools Rosa McCullagh, Site Coordinator

> Co-Chairpersons Nicolette Norris, Rose Sterr

> > Registrar Peter DeCraene

### **REGISTRATION INFORMATION**

- Individuals may register online and pay with a credit card at **www.mmcchicago.org**. Groups with a single check must complete the registration for each participant and pay by mail.
- Only pre-paid registration can be accepted. There is no on-site registration.
- To register, please go to **www.mmcchicago.org** or complete the form on the following page.
- Registrations (both online and by mail) must be received by January 9, 2019
- No refunds will be available after January 1, 2019. There will be a \$5 processing fee for all refunds. However, we will allow someone to replace the original participant (with the same workshops) at no cost until January 13.
- For registration by mail, only checks made payable to MMC will be accepted. No purchase orders can be accepted.
- Workshop placement will be done in the order in which registration is received. We will try to honor your workshop selections. Register early!
- Workshop registrations will be sent by January 20, 2019.
- Lunch is an additional \$9.75 above the cost of registration.
- BACK BY POPULAR DEMAND!! A free, bonus session will be given after lunch. 6 great presenters will each share one great idea, lesson or activity (in exactly 10 minutes each). See all 6 for no additional cost.

For further information about registration, please contact:

Peter DeCraene	mmcconfregistrar@gmail.com
	847-424-7415

#### Registration Receipt Deadline: January 9, 2019

Send form and check (payable to MMC) to:

Peter DeCraene 1837 S. Harvey Ave. Berwyn, IL 60402

 $\star$ 

\*\*Please note: If you are an individual completing registration and payment online, you <u>SHOULD NOT</u> complete and mail in this form.

Name		
Preferred Mailing Address	Home	School
City	State	ZIP
Daytime Phone		Evening Phone
School/Affiliation (for nametag)		
E-mail address (Required)		

Please list your first four choices for each session by NUMBER.

Session 1 8:30–9:45 AM	Session 2 10:00–11:15 AM	Session 3 11:30–12:45 PM
1.	1.	1.
2.	2.	2.
2	2	2
3:	3:	3:
4:	4:	4:

FEES: Make checks payable to "MMC." Purchase Orders cannot be accepted.

	\$32 for MMC member conference
Registration Fee	\$38 for non-member conference
(choose one)	\$20 for student conference
	\$67 conference & 1 yr membership (new members only)*
	\$42 for student conference & 1 yr e-membership* *complete membership form on next page
Lunch (optional)	\$9.75
TOTAL	Make check payable to <b>MMC</b> . (No purchase orders.)
Do you plan to a	ttend the free post-lunch, bonus session? $\Box$ Yes No
Questions about re	gistration? Peter DeCraene at 847-424-7415 or mmcconfregistrar@gmail.com

**MMC Membership Form** Send with Conference Registration Form (If you aren't a member, become one!)

Name		
Home Add	lress	
Phone		
School/En	nployer	
School Ad	dress	
Phone		
E-mail (required)		
Ele (ree	ctronic-only me ceive emails rat	embership* ther than paper copies)
* All student	memberships are e	lectronic-only memberships.
Which add	lress do you pr	efer for us to use?
School _	or Home	(check one)
Job Title choose or	Ie	Level choose one
Teacl	ner	Elementary
Depa	rtment Head	Middle School
Admi	nistrator	High School
Stude	ent Teacher	College
Other	•	

# Metropolitan Mathematics Club of Chicago 2018–2019 Program

September 14, 2018 — Sheila Hardin at Fountain Blue Starting the School Year, Prepared to Fail at Teaching

November 16, 2018 — Gail Burrill\*\* at Des Plaines Elks Club The Wonders and Joys of Mathematics and Statistics: Catalyzing Change in School Mathematics

> December 14, 2018 — John Benson at Fountain Blue

Magnificent Mathematics: Some of My Favorite Problems

January 18,2019 — Matthew Moran at Des Plaines Elks Club The Robots are Coming for Your Teaching Job:

Educational Ramifications in the Machine Learning Age

January 26, 2019 — University of Chicago Laboratory Schools MMC Conference of Workshops

March 1, 2019 — Eli Luberoff\*\* at Fountain Blue Technology that Thinks WITH Students, Not FOR Students

May 10, 2019 — Annie Fetter\*\* at Fountain Blue Sense-Making, Ideas, Curiosity, and Learning

June 14, 2019 — Tom Dick at Renaissance Chicago North Shore Hotel (co-hosted by MEECAS) Cubics, Conics, CAS, and a Curious Connection Called "The Most Marvelous Theorem in Mathematics!"

Doors Open/Social Hour: 5:45 pm; Dinner and Talk: 7:00 pm Fountain Blue Banquets & Convention Center, 2300 Mannheim Rd., Des Plaines, IL Des Plaines Elks Club, 495 Lee Street, Des Plaines, IL

Make your reservations and special meal requests no later than the Monday before the meeting if possible. Reservations can be made online at **www.mmcchicago.org** or by phone at 847-486-4291

\*\* On the Saturday morning following the talks by Gail Burrill, Eli Luberoff, and Annie Fetter, the speakers will be running workshops. Check out the MMC website at www.mmcchicago.org for more information. Reservations will be required for these workshops.

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