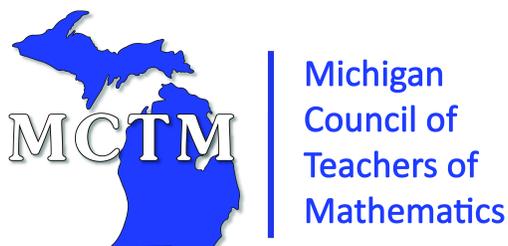


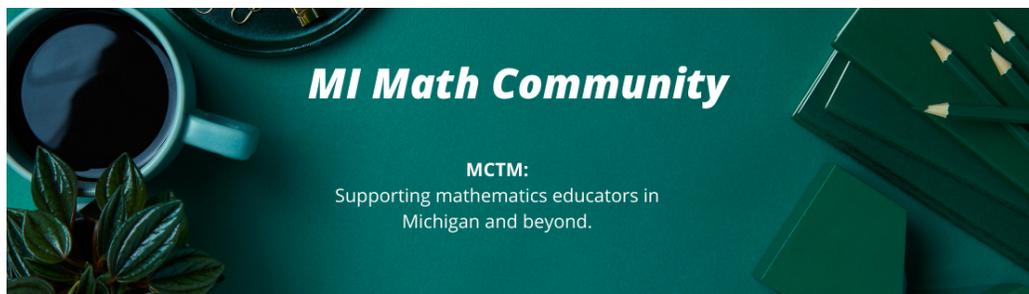
Welcome to MCTM's e-Newsletter!

MI Math Community January 2021



Best viewed on a desktop or go [HERE](#) to see as webpage.

Teaser: Check out the bottom of this email for some downloadable KenKen puzzles for you and your students as well as a math puzzle about the number 2021!



Happy New Year!

We hope that you were able to take the opportunity to rest, recharge, relax, and disconnect from your education responsibilities over the holidays. Whether you are teaching F2F, remote, or hybrid -- whether you are in the classroom everyday or support those who are --- this is a school year like no other. The resiliency, dedication, and creativity of educators is in full force, as is the connections we continue to build with our colleagues to assist and support each other. If no one has told you today: **YOU ARE AWESOME!**

5 Practices for Orchestrating Productive Mathematics Discussions

Marcus Deja, Kent Intermediate School District

"If you're anything like me, you've probably found yourself exhausted at the end of the day sitting in your classroom wondering what shifts to make to the learning environment to actually get students to talk more about mathematics. Reflecting, trying, coaxing and even the occasion pleading were several practices in my toolkit that I employed to try to move further into a student-centered learning space. Luckily, someone in my network had the wherewithal to guide me towards professional learning through the text *5 Practices for Orchestrating Productive Mathematics Discussions* by Margaret Smith and Mark Kay Klein. The first article in this series will describe the necessary conditions, or groundwork, for rich student-centered conversations to take place centered on this book."



5 Practices for
Orchestrating Productive
Math Discussions Part I

Mathematical Literacy? Disciplinary Literacy? We Need and Want Both.

Elementary educators are familiar with many of the literacy standards as they are the superheroes that teach almost ALL elementary subjects. Applying these ideas to mathematics at both the elementary and secondary levels is gaining traction. The GELN (General Education Leadership Network) has recently released Essential Practices for [Disciplinary Literacy Instruction in the Secondary Classroom](#) and has a new blog post that includes authors from within the MCTM community. We want our students to be both critical thinkers and problem solvers. As this post delves into the definition of literacy, the following chart is discussed. Interested in learning more? Click [HERE](#) to read more!

Literacy Characteristics	High-Quality Mathematics Teaching & Learning Characteristics
Socially constructed	Include partner, small group, whole class interaction and collaboration
Uses a symbol system to communicate meaning	No shortage of symbol systems here! Numerals, equations, diagrams, graphs, tables, matrices, words, labels...and mathematical symbols ($\%$, $!$, \angle , \perp ...)
Uses a technology to produce and share	Writing, drawing, graphing, video and audio recordings, manipulatives, technology tools...
Reading different forms of texts	Symbolic forms, graphs, diagrams, sentences, paragraphs, arguments, prose, drawings...
Producing different forms of texts	Produce all types of mathematical text for a variety of audiences and purposes
Applying all of the above in context	Solve problems; reason; make and critique arguments; model; use tools; be precise; find, recognize, and generalize patterns
Access information	Obtain mathematical and other needed information from a wide variety of sources
Process information	Comprehend, apply, analyze, synthesize, evaluate; connect, calculate, reflect, use tools
Communicate information	Share thinking using a variety of techniques and tools appropriate to the task, audience, purpose, and desired effect (explain, argue, inform, persuade, etc.)



MCTM's 2020 Mini-Grant recipients have been chosen! Open to members, these mini-grants (up to \$500) are now offered yearly. This is the second year that MCTM has awarded these grants. Thank you to **Meegan Coonan**, our new **Scholarship Chair** for coordinating and to our review committee for helping to select the awardees. It was a difficult choice to make! Consider applying when the next cycle opens in the fall.



Aly Morici

Math Specialist, Hamtramck Public Schools

"I am an elementary Math Specialist in Hamtramck Public Schools, and we have been learning virtually all school year. I applied for the MCTM Grant so I could have a document camera to lead Number Talks, show math manipulatives, and more effectively lead small-group math instruction. I can't wait to incorporate this new tool in my virtual classroom!"



Press Release

Contact: Martin Ackley, Director of Public and Governmental Affairs, 517-241-4395
Bill Disessa, Spokesperson, 517-335-6649

State Superintendent Supports New Guidance to Return to In-Person Learning

In a press release distributed just before our publication time, the Michigan Department of Education released a statement about returning to in-person learning. "State Superintendent Dr. Michael Rice supports the new guidance from the Michigan Department of Health and Human Services (MDHHS) today for schools to keep students, staff, and communities safe during the COVID-19 pandemic while providing the in-person instruction that is crucial to learning and development."

click the link below to see the PDF of the press release.

MDE Press Release 1/8/21

NEW! NEW! NEW!

This month we are debuting our new Vendor Corner! Here is where vendors and exhibitors that you have seen at MCTM conferences and events will be sharing special resources, information, and opportunities for *MI Math Community* readers!

VENDOR CORNER:

SPONSORED BY:



Families of functions modular course

How can we help teachers and their students during the current “virtual teaching” era?

An online video graphing course! Created by two mathematics educators that combine over 40 years of successful high school mathematics teaching, this course helps students learn how to graph 13 parent functions and 6 transformations of each of these parent functions. Use 200+ colorful, interactive videos that permit students to explore at their own pace. And it is modular – students only use the videos that they need. This free course works with any graphing technology or no graphing technology.

These videos were carefully designed using two different pedagogical approaches: graphing by table and graphing by a “dance” (pattern recognition). Using proper mathematical language is emphasized.

Here are the 13 parent functions (so far), followed by the 6 transformations:

- 01 $y = x^2$ 02 $y = |x|$ 03 $y = \sqrt{x}$ 04 $y = \frac{1}{x}$ 05 $y = x^3$
06 $y = \sqrt[3]{x}$ 07 $y = 2^x$ 08 $y = \left(\frac{1}{2}\right)^x$ 09 $y = e^x$ 10 $y = \ln(x)$
11 $y = \sqrt{r^2 - x^2}$ 12 $y = [x]$ 13 $y = f(x)$ generic, piecewise

Vertical shifts: $f(x) + a$

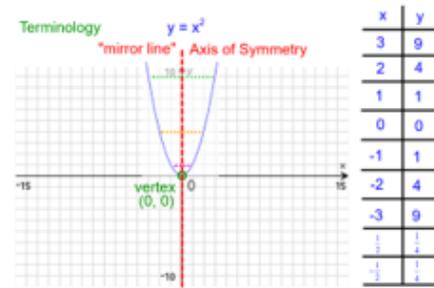
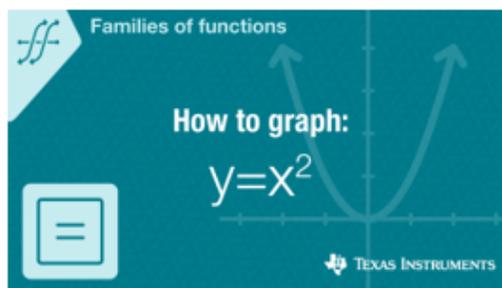
Horizontal shifts: $f(x - a)$

Dilations (vertical): $a \cdot f(x)$

Horizontal stretch/shrink: $f(a \cdot x)$

Opposite of $f(x)$: $-f(x)$

f at the opposite of x : $f(-x)$



Here are links to the course and more information:

< The Families of Functions website: bit.ly/fofTI or education.ti.com/en/resources/family-of-functions

< A one-page PDF that explains the course bit.ly/fofTlexplain

Special just for Michigan Council of Teachers of Mathematics members: The Linear Relations and Slope Module is almost completed. Be among the first to use the videos before they are posted on the FoF website at bit.ly/FoF_lines

Contact co-creator Tom Reardon with questions, comments, suggestions:
tom@tomreardon.com

Contact your local TI Education Technology Consultant Michelle Grooms for support or information on Texas Instruments' classroom solutions & resources at 614-306-1455 or mgrooms@ti.com.

About Texas Instruments Education Technology

For more than 30 years, TI has been an active member of classrooms around the world, empowering teachers, and inspiring students to succeed in mathematics and science. Through our calculators, coaching and classroom resources, TI Education Technology is transforming the way teachers teach and students learn STEM (science, technology, engineering, and mathematics) subjects. With our award-winning products, engaging lessons, real-time assessment and top-notch professional development, TI is leading the way in mathematics and science education.

[Watch a video](#) about how TI technology inspires students to succeed in the classroom, college, and into their careers.

<http://education.ti.com>

Follow TI on Social Media at [@ticalculators](#)

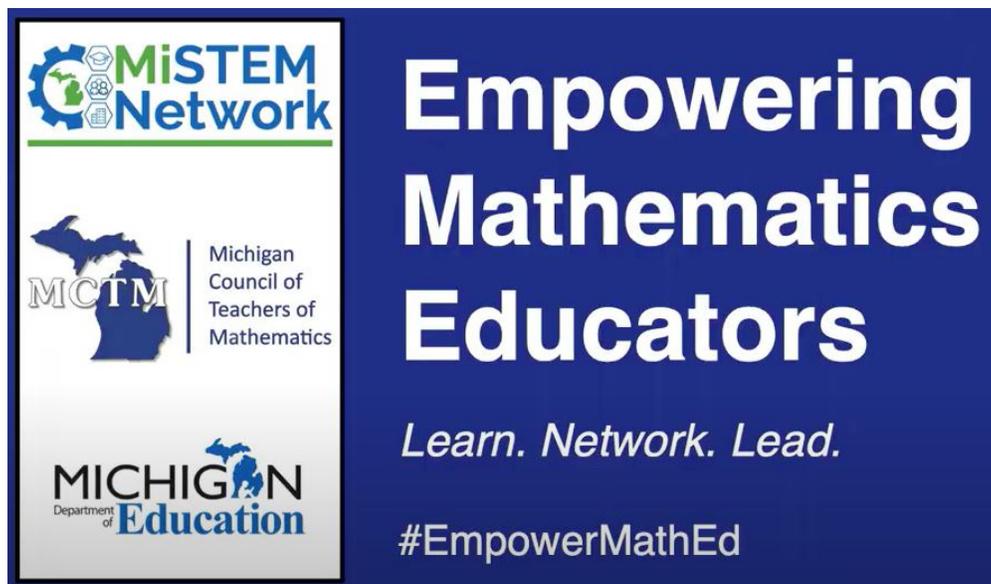


Contact information:

Michelle Grooms
Education Technology Consultant
Texas Instruments, Inc.
mgrooms@ti.com | m.614.306.1455 | Twitter:
@Mlg5791

Next Session: January 25, 2021 7:00 - 8:30 p.m.
(note date change)

Register for January's Session Here!



**Empowering
Mathematics
Educators**

Learn. Network. Lead.

#EmpowerMathEd

#EmpoweringMathEd Series

Join us on January 25th from 7:00 to 8:30 pm to learn from and with **Steve Leinwand**. Steve is joining our Empowering Mathematics Educators series as a special guest to continue to push us forward in thinking about teaching and learning mathematics.

Abstract: "We will start by modeling a lesson that incorporates the eight NCTM Mathematics Teaching Practices and expand our discussion to the "equitable teaching practices" to help us all better envision the kind of classroom practices that support an anti-racism agenda."



Read the Full Article
[HERE](#)

Increasing Student Engagement Using Pear Deck

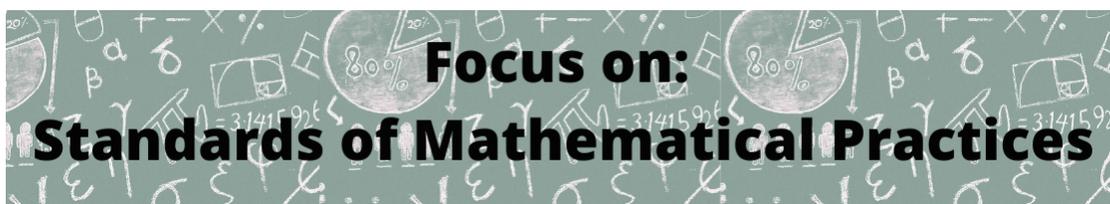
Jennifer Lawson, Hillside Middle School, Northville

"I have always prided myself on the engagement of students in my classroom. The room was abuzz with learning. We would laugh together, learn together, make mistakes together. It was our happy place, and it was wonderful! Then the pandemic hit, and everything changed. I went from a teacher who had 100% percent student engagement in my classroom to almost no engagement at all online. I chalked it up to the times and did the best I could as I never taught online before. I knew that life would be back to normal in a few months, so everything would be back to normal. Then it wasn't."

Click the button to read the entire article, including links to step by step **videos** Jen made to help fellow teachers learn how to use Pear Deck!

Reminder: Presidential Awards for Excellence in Mathematics & Science Teaching (PAEMST)

The 2020–2021 nomination and application cycle for 7–12th grade STEM teachers has officially opened. The [Presidential Awards for Excellence in Mathematics and Science Teaching \(PAEMST\)](#) program recognizes the importance of honoring excellent teaching and promoting STEM education. Nominate exemplary 7–12th grade science, technology, engineering, mathematics, and/or computer science teachers within your district at www.paemst.org today. **Nominations close on March 1, 2021.**



This begins a series of content that focuses on the SMPs across grade levels. We are coordinating with Professor of Education and Mathematics [Patricio Herbst](#) and Assistant Research Scientist [Amanda Milewski](#) from the University of Michigan to bring *MI Math Community* readers information and opportunities around the Standards of Mathematical Practices. District math specialists and curriculum leaders are encouraged to reach out to discuss ways of providing professional development to larger groups of teachers.



SMP 1: Make Sense of Problems & Persevere in Solving Them

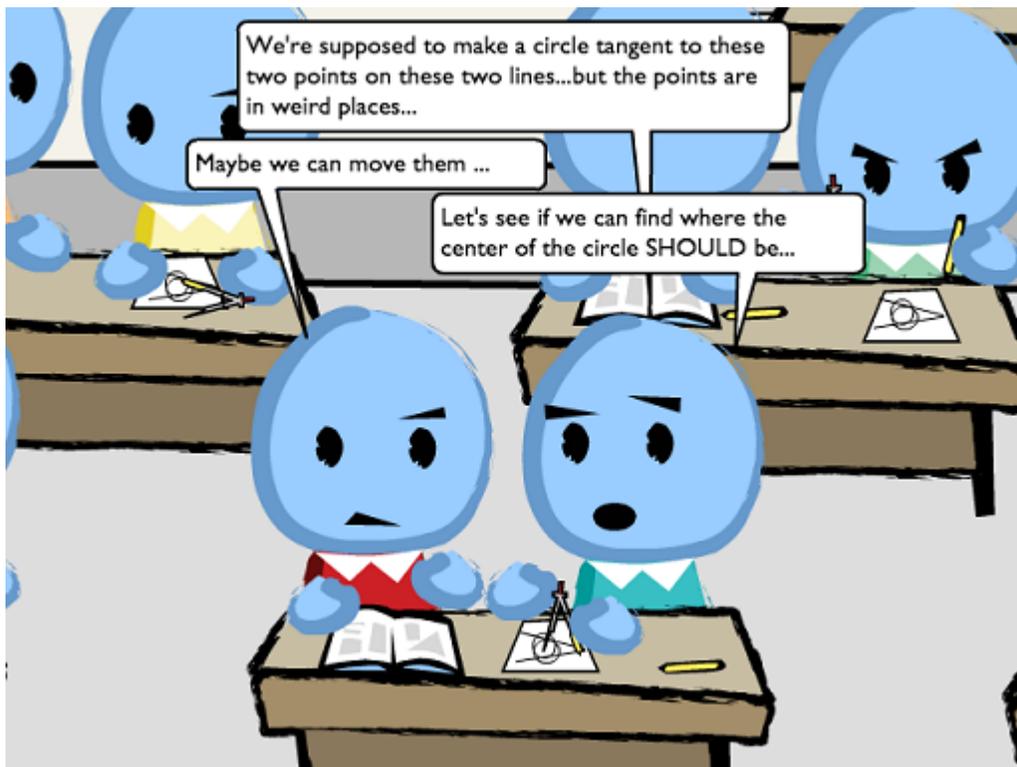
Standard for Mathematical Practice #1 states that students should learn to “make sense of problems and persevere in solving them”.

- What could this look like?
- How could a teacher promote it?

In the online course linked below those questions are discussed using a problem-centered geometry lesson. Participants will observe, annotate, and discuss a scenario in which students are working on finding a circle tangent to two intersecting lines. In the scenario, students run into difficulties finding the circle and have to persevere by "considering analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution." After considering various ways the teacher could support SMP #1, participants will have the opportunity to try implementing the SMP with their own students and receive feedback from an online facilitator.

The course will award 5 SCECHs upon completion.

Visit <https://lessonsketch.catalog.instructure.com/> to enroll for \$75 (use the code MCTM1).



inside + × = ÷
mathematics

Connections to Classroom Practices Grades 1-12

Inside Mathematics illuminates the mathematical practice standards with **video** excerpts of mathematics lessons. The link below will take you to SMP 1.

The CCSSM [website](#) describes SMP 1 as "Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight

and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches."

The [Chasing Einstein Challenge](#) is a 9-week activity for 3rd-12th grade students designed to help them become creative and persistent problem solvers. Created by Dr. Kevin Smith (Assistant Professor of Mathematics Education at Dakota State University) and Brandi Antonsen Fiegen (middle school math teacher at the American School of Bangkok in Bangkok, Thailand), they provide videos that explain the SMPs to students in student-friendly language. Click on the image below to go to the video or click [HERE](#). These materials are free for classroom teachers to use!





The **Michigan Mathematics and Science Leadership Network** ([MMSLN](#)) strives to achieve equitable access to research and standards-based mathematics and science learning experiences for all Michigan students. We advocate for professional learning and collaborate statewide and nationally with mathematics and science educators to create, implement, and evaluate leadership and professional learning opportunities for and with Michigan mathematics and science educators.

Michigan Learning Channel Launches!

After months of planning, Michigan's public television stations, in partnership with leading educators and community leaders, are launching the Michigan Learning Channel (MLC) beginning Monday, January 4. It will be available statewide on a series of new dedicated broadcast channels. See MMSLN's blog post [HERE](#) for more details and the history of development. Visit [MichiganLearning.org](#).

For those who are already teaching and learning with Illustrative Mathematics, join our monthly virtual [Unit Overviews](#) to dive into the upcoming unit to uncover the progression of mathematical understanding that unfolds within the Story of the Unit.

For those who are curious about happenings in [high school teacher prep standards](#), supporting distance learning, and more, join our [bi-weekly \[science\] chats](#).

For those who are thinking about teaching and learning with Illustrative Mathematics, be on the lookout in early-January as we schedule virtual Curriculum Overview sessions where you'll get a chance to survey the *IM Math* curriculum. We'll focus on problem-based teaching and learning and the corresponding instructional shifts. We'll explore the resources available in the curriculum specifically around student understanding and discourse, planning, assessment, and instructional routines. In early spring, we'll release the schedule for our summer-time *IM Math* Academies, IM certified professional learning for teachers to get ready to teach with IM Math in the fall.

Questions about any of our offerings can be directed to Danielle Seabold, seaboldd@mimathandscience.org.

Opportunities from DACTM, NCTM, NCSM, CMP, & Oakland Schools

NCTM 100 Days of Professional Learning Access to Recordings

The 100 Day of Professional Learning has ended, but members still have access to the recordings from our dynamic and exciting sessions from the past 100 days. To access these recordings, visit www.nctm.org/online-learning/Webinars/list.

NCTM Free Trial Memberships

Now more than ever, teachers need support and quality resources they can trust. NCTM is offering [free trial memberships](#) so that teachers can have access to the full breadth of support and benefits NCTM offers.

NCSM Leadership Seminar

The November Bold Mathematics Leader's Seminar sold out, so don't delay if you wish to attend Seminar 2 on February 8, 2021. The seminar again centers around Coaching as a Vehicle to Influence Change. Go to the [NCSM Website](#) for information and to register.

DACTM (Detroit Area Council of Teachers of Mathematics)



Teacher Next Door

Do you ever wish you had more time to share ideas with an amazing teacher right next door to your classroom? Are you interested in learning how other teachers are implementing lessons with their students?

Join DACTM in our **Teacher Next Door** series where classroom teachers will share implementation stories of math strategies and content from their classroom.

Upcoming **Teacher Next Door** chats and registration information will be posted on our website:
<https://dactm.wildapricot.org/>

Interested in sharing a story? We'd love to hear it. [Complete this form](#) and a board member will follow-up. Contact Trish Dunn with questions.
tdunn@msd.net

2020-21 Teacher Next Door	
January 13th 7pm - 8pm	Delta Math in Secondary Classrooms Featured Teacher: Amy Beach, Lakeview High School
Zoom Registration Link	https://zoom.us/meeting/register/tJyduihrzspHnyHbtUffmGvUanRXZIOoAxG



Connected Mathematics Project (MSU)

A VIRTUAL CMP PROFESSIONAL DEVELOPMENT EVENT FOR 2021

In lieu of the 2021 CMP Users' Conference, CMP will be hosting a series of virtual webinars. Visit the website [HERE](#). The first webinar is: **USING BIG IDEAS TO GUIDE PACING DURING COVID-19: A FOCUS ON ALGEBRA IN GRADES 6-8**. Wednesday, January 13, 2021 / 7 p.m. EST / Cost: \$20

Missed MCTM's Math Fact Fluency Book Study or Looking to Extend Your Study on this Topic with Others?

Oakland Schools is offering a three-session virtual professional development by Gina Kling on Developing & Assessing Fact Fluency. If you are an Oakland County teacher, the training is FREE (others pay \$20) with SCECHs available! Get more information [HERE](#).



What's New
This
Month?

MCTM
Blog

MCTM Blog: So What *IS* Good Math Instruction Anyway?

Happy New Year blog readers! To kick off our year, we have an exciting series from **Jason Gauthier, Ph.D (Allegan Area Educational Service Agency)** around the simple question, "So what *is* good math instruction anyway?" **Part 1** tackles what the research based, classroom proven "pillars" are of High Quality Math Instruction and leaves us with a cliffhanger before diving into more detail exactly what each of the pillars mean and how we might go about engaging in mathematics this way. This is an engaging and informational series you won't want to miss!

As you are reading, perhaps you will feel the nudge to share you own experiences with your peers. As Chelsea Ridge, GVSU, quoted in November "Everyone thinks they can't before they can" ([Teaching Through a Pandemic: A Mindset for This Moment](#)). **We appreciate our teacher authors sharing their voice and would LOVE to hear from you!** Reach out to be featured on the MCTM blog by contacting membership@mictm.org !

Kelli Vansettters, MCTM Membership Chair

[Visit Our Blog Page](#)

MCTM's Miriam Schaefer Scholarship Winners 2020

This is our third and final recipient of the Miriam Schaefer Scholarship. These awardees are undergraduate students at Michigan colleges and universities studying to join us as K-12 educators!

Emma Flannery, Grand Valley State University

Emma is an elementary education major that looks forward to using a Math Workshop approach to work with her students in small groups.

"Math was always one of my favorite subjects because of the way I could be challenged and yet feel satisfied when I came to find the solution. With the hard work that I was able to put forward in mathematics, I never would have believed that my future self would continue to study this subject to one day teach others.

The good and bad experiences that I have faced with mathematics is what has led me to teach this subject so that I can encourage and motivate students to love math due to the multiple strategies to find an answer, the challenge, and the great feeling of success. Becoming an elementary school teacher has been a dream of mine ever since I was in first grade."

From Our Readers: Teaching Remotely? You Might Want to Visit Here!

Newsletter readers have suggested the following website from the Kentucky Center for Mathematics. There will find some curated Virtual Math Instruction resources. Click on the image to be sent to the website.

To share your thoughts on Twitter or to suggest other resources you find valuable and want to share, use [@michiganmath](https://twitter.com/michiganmath) to let us know or send an email to Publications@mictm.org



[HOME](#)
[PROFESSIONAL LEARNING](#)
[RESOURCES](#)
[MAF](#)
[KYMTL](#)
[ANNUAL CONFERENCE](#)
[ABOUT US](#)

Resources for Virtual Math Instruction

Table of Contents

-  [Customizable Games and Templates](#)
-  [Number Words and Numerals](#)
-  [Cardinality, Addition and Subtraction Using Early Counting Strategies](#)
-  [Structuring within 5, 10 and 20](#)
-  [Conceptual Place Value and Multi-Digit Addition and Subtraction](#)
-  [Multiplication and Division](#)
-  [Fractions](#)

How-To's

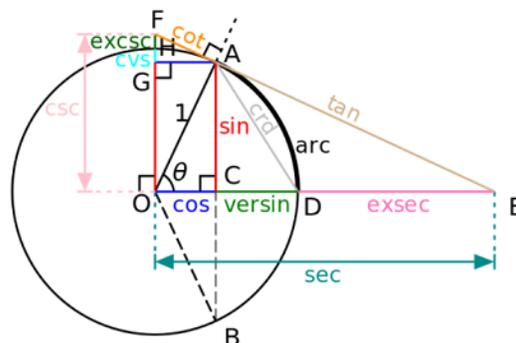
- [Video Tutorial](#) - Introduction to KCM Virtual Resources
- [Video Tutorial](#) - How to share Google files with students
- [Video Tutorial](#) - How to use Jamboards
- [Web Page](#) - KCM's spring virtual professional learning sessions
- [Web Page](#) - KCM's fall virtual professional learning sessions

Recent Updates

- 1/5/21 - In Structuring within 20, the activity Add 4 in a Row has been added.
- 1/5/21 - In Customizable Games and Templates, the activity Customizable Virtual Treasure Hunt has been added. This activity is also included in Number Words and Numerals.

SECRET Trig Functions?

Just how many trigonometric functions ARE there? Trig, Pre-Calc, and Calculus teachers may be interested in this article from Scientific American that lays claim to 10 secret trig functions that teachers don't teach! "The secret trig functions, like logarithms, made computations easier." Surprisingly, these 'bonus' trig functions are never negative? Intrigued? Click on the button to visit the article!



A diagram with a unit circle and more trig functions than you can shake a stick at. (It's well known that you can shake a stick at a maximum of 8 trig functions.) The familiar sine, cosine, and tangent are in red, blue, and, well, tan, respectively. The versine is in green next to the cosine, and the exsecant is in pink to the right of the versine. Excosecant and coversine are also in the image. Not pictured: vercosine, covercosine, and haver-anything. Image: Limaner and Steven G. Johnson, via Wikimedia Commons.

Scientific American Article

Virtual Field Trip for Math?? You bet!

Statistics in Schools, part of the U.S. Census Bureau, has free materials for educators that are written by and for classroom teachers. This virtual 'trip' has a version for both secondary and elementary students.

"Mission: Census - A Virtual Field Trip to the U.S. Census Bureau is a video that takes students on a quest to learn more about how census data is collected and used.

Join us for a behind-the-scenes introduction to the Census Bureau through exclusive interviews with subject matter experts. Students are invited on a mission to discover key details about Census Bureau programs and then test their knowledge with an interactive challenge at the close of the program.

During this virtual journey, students will be treated to visits with subject matter experts, who will share interesting details about Census Bureau programs, statistics and surveys. After the tour, students can participate in an interactive challenge to test what they've learned."

Want to get email updates from them directly? Sign up [HERE](#).

[Link to Virtual Trip](#)

#KenKen Number Puzzles

Have you heard of KenKen number puzzles? The image below is an example of the daily challenge available on their website (click to be taken to the actual site). Students -- and adults -- of all ages enjoy these puzzles that help to build number sense and logical reasoning skills. **Did you know that educators can subscribe to get a FREE set of puzzles each week?** From the website:

"KenKen was born in a math classroom—and we want it to stay there! That's why we introduced our KenKen Classroom Program for teachers. Every week, we'll email you a set of free KenKen puzzles that is perfect for student use! As the challenge level subtly shifts week to week, students develop their math and logical thinking skills without even knowing it. And it's all absolutely FREE!

Students love KenKen for the same reasons you do: It's fun, it's challenging, no two puzzles are alike, and you get to use different parts of your brain. As a teacher, you can be confident that your students are mastering basic computation skills while employing advanced problem-solving strategies."

Sign up for FREE Weekly KenKen puzzles!

DAILY CHALLENGE OR SELECT PUZZLE TYPE AND DIFFICULTY
Puzzles update at midnight EST

Rules

Click any button to play

16x		7+	
2-			4
	12x	2÷	
		2÷	

Example Only

FAQ/Troubleshooting Tips and Tricks

Fill in the blanks in the following equation so
it makes arithmetical sense:

$$10987654321 = 2021$$

There are many correct answers.

Share on social media.

Tag @michiganmath

This puzzle is an annual ritual on Alex Bello's Monday Puzzle (Mathematics) for the [Guardian](#). Try it yourself! How could you use this in your classroom?

Welcome to **MI Math Community**! One of MCTM's renewed initiatives is a monthly e-newsletter to share information about mathematics, mathematics education, and the happenings of MCTM.

Have an idea or topic you'd like to see included? Have a short article to submit for publication consideration? Want to give feedback? Please email MCTM Publications Director and MI Math Community Editor **Christine Kincaid Dewey** at Publication@mictm.org. Look for the e-newsletter to develop and grow over time based on member input.

Please share this newsletter with ALL of your educator colleagues! We want to spread the good news!

*This message has been sent to you {Organization Name}
If you no longer want to receive these letters, you can unsubscribe at any time*

Contact the e-Newsletter editor at Publications@mictm.org