

Welcome to MCTM's e-Newsletter!

MI Math Community November 2021



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

See the end for our "Have You Seen This?" section.

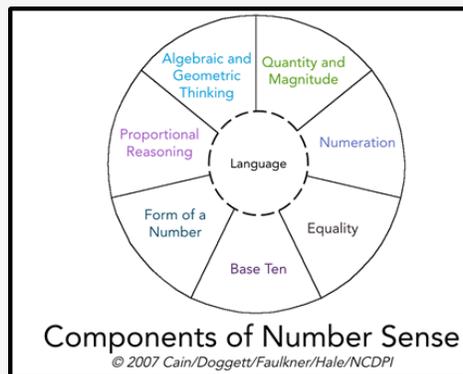


Components of Number Sense: Part I

When developing math lessons, it is important to have an understanding of the components of number sense. The seven components are the backbone needed for students to be able to "do math."

This particular Components of Number Sense wheel was developed by Cain, Doggett, Faulkner and Hale. The circular image implies that no one component is more valuable than the others. They are interrelated and are the foundation for mathematical reasoning to occur. We will explore three of the components in this edition with the additional components to be highlighted in future editions.

Read Noelle Palasty's article about Quantity & Magnitude, Numeration, and Equality on the Newsletter page of the MCTM website by clicking on the button below. Noelle is a Math Accessibility Specialist at Alt+Shift one of our partners in the MRALT Conference held in October each year.



[Link to Full Article](#)

Subitizing -- A Primer for Early EI Teachers & Beyond!

What is subitizing? Early elementary mathematics teachers help students develop the ability to recognize a small group of objects without counting. In support of a focus on number sense, Valerie Faulkner has videos that guide classroom teachers through the levels of subitizing, including troubleshooting & practice that can be used in the classroom.

[Faulkner - Subitizing Videos by Level Webpage](#)



The Joy of Data Science: An Avenue for Equity in the Classroom

Welcome Joy Straub!

A presenter at our summer event, Joy will be a regular contributor to MI Math Community for a series of articles about Data Science.

"Multiple entry points could be a math teacher's bane of existence. How do I make this course relevant and successful when students come in with such varied experiences? In all of our courses we struggle to find this sweet spot for our students. Four years ago I embarked on a journey to bring Data Science as a full high school course to our district and state. At that time I knew it was good stuff, but little did I know how good!! Fast forward to today. I have classes filled with 35 students from various backgrounds -Special Education, English Learners, AP Calculus, Max at Integrated 2, Computer Science, Math Lack lusters, Math Whizzes - all sitting side-by-side thriving, learning, and sharing their expertise with the others. The playing field is leveled. How, you might ask?"

Click the link below to read more about Joy's experience in using Data Science to foster equity!

[Read More!](#)

NCTM President Trena Wilkerson: Mathematics with Rigor, Relevance, and Responsiveness

"Consider these three "Rs" of mathematics: Students should engage in **rigorous** and challenging mathematics that is **relevant** to their lives and is **responsive** to their background experiences, cultures, interests, and knowledge. But what do rigor, relevance, and responsiveness mean in teaching and learning mathematics?"

Rigor

I was recently on a panel for a [Data Literacy STEM webinar](#), and we were asked what rigor was. We shared that sometimes people think rigor is something difficult or unattainable and may be associated with the mathematics of only calculus and beyond. We countered that rigor in mathematics is about challenging students to think deeply about and with mathematics. Rigor is not memorizing a myriad of procedures but being able to flexibly analyze and apply mathematics to different situations with a focus on concepts and relationships. A rigorous approach develops students' understanding through making connections both within and across mathematics and to other areas of their lives. Rigor works to increase a positive mathematical identity and agency and includes the development of problem-solving skills, conceptual understanding, procedural fluency, and essential mathematical processes and practices.

NCTM's [Catalyzing Change](#) series calls us to engage students in rigorous and intellectually challenging mathematics through meaningful, high-quality mathematical experiences. This can be challenging with a vast amount of content, a broad range of standards, varied prior knowledge and experiences of students, and limited instructional time. Teachers are rising to this challenge daily by organizing a coherent, cohesive curriculum; implementing effective, equitable teaching practices; providing [scaffolding and support](#) to students; and maintaining high expectations for all students to engage in rigorous mathematical learning. NCTM past president Linda Gojak reminded us that "students who are successful in a rigorous learning environment take responsibility for their learning. They learn to reflect on their thinking" ([February 2013 President's Message](#)).

All students deserve the opportunity to learn mathematics with rigor, but another essential aspect is relevancy."

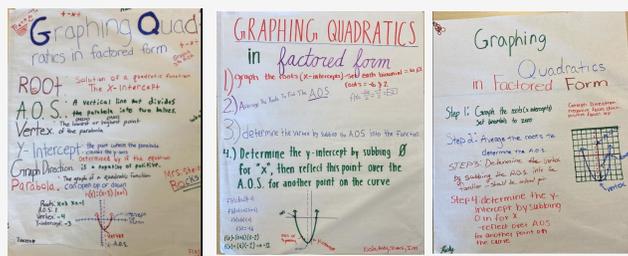
Continue reading this message on the National Council of Teachers of Mathematics' website at the link below!

[FULL NCTM President's Message Link for Mathematics with Rigor, Relevance, and Responsiveness](#)

Anchor Charts in Algebra 2

Mary Steinberg, a mathematics teacher at Centerline High School in Macomb County, MI uses anchor charts in class. "Today I had my Algebra 2 students creating Anchor Charts. Each team of 4 had markers - each marker is a different color because the rule is they *all have to participate equally* in creating the anchor chart. The topic we are studying currently is "Graphing Quadratics in Factored Form". Here is what they came up with. Some are not finished. Tomorrow we will do a carousel walk and then decide (as a class) which poster gets to be put up on the wall."

How might anchor charts be helpful to students in YOUR classroom?





Teaching Routines:

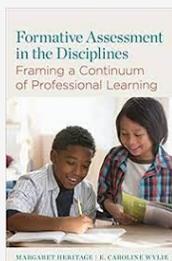
This [video](#) from the Teaching Channel shows an 8th grade classroom teacher who gives students a bell-ringer problem that they answer on index cards. She then scans the answers and chooses her favorite no, or wrong answer because it contains good mathematics. The class then discusses what went right or wrong with the solution. "Everyone makes mistakes...But a mistake is your opportunity to share with me how much you understand." There are also [first grade](#) and [third grade](#) examples to watch!



Nominations Open: Presidential Awards for Excellence in Mathematics & Science Teaching K-6

The nomination period is open for this cycle of PAEMST! Anyone -- principals, teachers, parents, students or the general public -- may nominate exceptional teachers. Teachers may also self-nominate as well. This cycle is for K-6 educators. The nomination deadline is January 7, 2022 with the application deadline following on February 6, 2022. The application has many components and the sooner the nomination process starts, the more time there is to complete it.

[PAEMST Website](#)



MAC Reads - Formative Assessment Book Study for Math & Science Educators

The Michigan Assessment Consortium is organizing a multi-disciplinary Book Study. More information can be found [here](#):

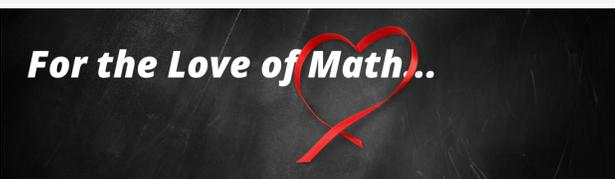
There are two ways to participate!

Buy your book and then register for the MAC webinars (\$25) at the MAC URL.

AND/OR

Join Math and Science educators for all three **FREE** dates 11/17, 12/15 and 1/19 from 4:00-5:15 p.m. via Zoom. Please register for the November date when asked to select a date.

[Register for Free Event HERE](#)



Where Transcendental Numbers Hide in Everyday Math

39 | 

The transcendental number π is as familiar as it is ubiquitous, but how does Euler's number e transcend the ordinary?

A reader share this article with us. Puzzle Columnist Pradeep Mutalik from Quanta Magazine writes about Euler's constant, e .

"In mathematics, on the other hand, the meaning of the term "transcendental" is more mundane. It simply describes the class of the infinitely many numbers that cannot be solutions of polynomial equations like $ax^3 + bx^2 + cx + d = 0$, where the coefficients a, b, c, \dots , are all rational and the highest power of x can be any positive integer. As the great mathematician Leonhard Euler put it, "They transcend the power of algebraic methods."

Today we will examine some ordinary-looking problems in which e shows up unexpectedly, giving us a fleeting glimpse of its universality."

This October 27, 2021 post is also offering a prize for "the most interesting, creative, or insightful solution (judged by the columnist." Head on over to the article and post your solution in the comment section!

Quanta Magazine Article on Transcendental Numbers



November is National Native American Heritage Month

After last month's section on Hispanic Heritage Month submitted by a reader, I wondered what math connections there might be for November's heritage month designation for Native Americans / Indigenous People. I found some Michigan connections -- like U of M Professor Robert Eugene Megginson. [Professor Megginson](#)'s originally studied functional analysis but now focuses on mathematics and STEM education in general, particularly in how it affects underrepresented minorities. He is of Oglala Sioux heritage and has received many awards for his service to the Native American community. He has designed and participated in programs that work directly with students of color to encouragement their success in mathematics-based field.

AIMC - [Alliance of Indigenous Math Circles](#)

The story of building AIMC, according to a April 2019 [article](#) of AMC, opens with "To say that US Native Americans are underrepresented in mathematics is itself an understatement." There are 12 current mathematics PhD's among this population in the US. More Michigan connections such as student Henry Austin (Allendale, MI) and David Austin (Professor Grand Valley State University) are mentioned in those relating their experiences of working with Native American students in math circles. The website above has links to a [database](#) of free materials for working with all students in math circles.

One final link: [Using Native American Legends to Teach Mathematics](#) from the University of Wisconsin Oshkosh whose goal was to prepare students to tutor in elementary classrooms at their home reservations.

Virtual Manipulatives for ALL Grade Levels All in ONE Place!

Click on the image or the button to go to the webpage where you simply click on the grid to be taken to the manipulatives you want!



National Library of Virtual Manipulatives

[Click here to learn more about the NLVM CD](#)



Virtual Library
About
eNLVM
Buy Now!

Search

[Download NLVM App, Additional Features, No problems with Java](#)

Index	Pre-K – 2	3 – 5	6 – 8	9 – 12
Number & Operations				
Algebra				
Geometry				
Measurement				
Data Analysis & Probability				

Credits | Contact | © 1999-2021 Utah State University. All Rights Reserved.
English | Español | Français | 中文

Recommended by a Reader: K-5 Math Center Resources

A MI Math Community reader wanted to share this with our community! Although THIS website offers paid licenses for full-year math center resources, there are a variety of FREE tasks offered for K-5 grade levels. It's well organized by strand (Number, Geometry, Measurement & Data) as well as by grade level. Resources are organized by CCSS objective. In addition, there are great clip art bundles for a nominal fee. Enjoy!

K5Math Teaching Resources Website

Too good not to include again!

A project from Dan Meyer and the BuzzMath team, this site provides an index of creative commons videos with accompanying graphing document for students to graph the 'story' they see on various 15 second videos. Teachers may search for different types of graphs (constant, linear, piecewise, etc.) and topic (baseball, clocks, cups, etc.)

. Click on the image above or go [HERE](#) to get more information

In addition, the New York Times has a webpage entitled "What's Going On in This Graph?" that contains a variety of graphs, maps and charts from The Times that teachers can use for student discussions.

<https://www.nytimes.com/column/whats-going-on-in-this-graph>

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 Publications@mictm.org. Look for the e-newsletter to develop and grow over time based on member input.

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