

Newsletter of the Metropolitan Mathematics Club of Chicago Volume LII No. 4 Dec. 2022/Jan. 2023

# **Reaching More Students in Less Time**

# January Speaker Pam Harris



**Date/Time:** Friday, January 20, at 7:00 p.m.

**Location:** Zoom online platform

**Registration:** Register online at mmcchicago.org

**Cost:** No charge; donations welcome via Zelle at zelle4mmc@gmail.com You've tried All The Things. You're on a mission to find a better way. Join us to learn to use class time differently than how you and I were taught AND differently than how we were taught to teach math. We're going to shift the focus and position all students as mathematical sense makers, helping them find the joy and beauty in doing real math. Come and experience mathematizing and learn why Pam advocates that Math is Figure-out-able!

Pamela Weber Harris is the author of several books, including Building Powerful Numeracy, Discovering Advanced Algebra, and a book for professional development leaders. A former secondary mathematics teacher, Pam currently teaches at Texas State University, is a K-12 mathematics education consultant, a T<sup>3</sup> (Teachers Teaching with Technology) instructor, and an author and coauthor of several professional development workshops. Pam presents frequently at regional and national conferences. Her particular interests include teaching real math, building powerful numeracy, sequencing rich tasks to construct mathematics, using technology appropriately, smart assessment, and vertical connectivity in curricula in schools PK-12.

Dec. 2022/Jan. 2023

# **Points from the Interior** by Laura Kaplan

How do we connect with other mathematics educators? As my school begins its PLC journey, I am reminded of the importance of collaboration among teachers for the sake of improved student learning. While the PLC process allows for (nay, insists upon) time for teachers to meet and discuss student learning, not everyone is taking part in PLC. Even for those who are, PLC does not provide some of the detailed support we want and need, not to mention the benefits that could be had from learning from educators from different schools, districts, or even countries. What are the best ways to do that?

Frequent readers of this column know that I am a fan of in-person events, such as MMC dinner meetings or the recent ICTM conference. The conversations had in these spaces are invaluable for broadening my perspective on teaching and hearing how others are tackling various issues, from how to implement vertical non-permanent surfaces in a classroom with only one wall of whiteboard to how much time is devoted to quadratics in Algebra 1. As good as the in-person experience is, time, money, and logistics get in the way sometimes. What other options do we have?

As the only AP Statistics teacher at my school, I have found community in two Facebook groups, *AP Statistics Teachers* and *Stats Medic Teacher Community*. Since I have nobody in my building to go to with questions, posting in these groups is a very close second. I can generally have an answer to any query by the end of the school day. Most frequently, I am lurking and reading everyone else's questions and the answers given by other, more experienced statistics teachers. What a wealth of information! In addition to getting questions answered, the groups are a source for resources that users share (reading guides for the textbook, etc.) and an opportunity to discuss pacing. I am sure there are Facebook groups for all manner of courses, not just AP Stats. Go check it out!

I have also found the friendliest corner of Twitter to be Math Teacher Twitter. Using the hashtags #MTBoS and #ITeachMath, teachers are frequently sharing ideas, starting conversations, and supporting one another. I cannot count how many resources I have found through a blog post or Google Doc shared through Twitter - a much broader source of ideas than I would get just from my coworkers. If you are a user of Facebook and Twitter, you know that each platform has a different vibe, and they both have their pros and cons. Try them both out and see what you find comfortable.

The last way in which I connect to other educators is a bit more one-sided. I listen to podcasts on my commute, all kinds, but I really enjoy the math education shows. Currently, I listen to Make Math Moments Matter with Jon Orr and Kyle Pearce. Most sessions are interviews with regular math teachers, just like you and me, who are having a struggle with something in their classroom. Kyle and Jon talk through the problem and discuss possible solutions. It is always interesting to dive so deeply into math pedagogy. I also enjoy a completely different show, *Math is Figure-out-able*, with Pam Harris (coming to MMC in January)! In these episodes, Pam and her assistant, Kim, discuss reasoning through various arithmetic problems without using the standard algorithm. Pam also extends the reasoning idea well beyond arithmetic into proportions, linear and quadratic equations, and more. These podcasts are free and allow me to continue thinking deeply about math education anywhere I'd like.

Surely you connect with math educators in a variety of ways. Hopefully, this introduced to you some new opportunities or even just gave you a new perspective on what these platforms could offer. Here's to connecting, learning, and growing!

### Little Kids, Big Math: What a Secondary Math Teacher Learned from Elementary by Nicolette Norris

Annie Forest started her journey as a math educator as a civil engineer. She was an engineer for about two years and decided that she loved math but did not like being an engineer. She went back to school and decided to become a high school teacher. Annie was excited to start her career as a secondary teacher but was placed in a middle school setting as a student teacher. Here, she fell in love with the grade levels and taught 6-8<sup>th</sup> grades for 12 years. She then became a K-8 instructional coach. She felt the job would be easy because she had a very strong



background in mathematical knowledge. Annie found out that she did not know much about elementary mathematics. It was through her journey as a math instructional coach, district math coordinator, and her present job at Metro Chicago Math Initiative that she gained an understanding of elementary mathematics and became a stronger secondary math teacher.

Annie took us on a journey of what she learned from elementary. She first had the audience do some math. Annie says to never gather as math educators without doing some math. A wheel shop problem was presented, and we were asked to think about how we would solve it.

The Wheel Shop sells different types of vehicles. There are bicycles and go-carts in a different room of the shop. Each vehicle has only one seat. There are a total of 21 seats and 54 wheels in a room. How many are bicycles, and how many are go-carts?

After allowing the audience a few minutes to work on the problem, she presented how most secondary teachers would solve the problem by creating a system of equations and using substitution to solve the problem. Annie then showed how elementary school teachers and students had solved the problem. They used manipulatives and visual models to solve the problem. Elementary school teachers used manipulatives to work through the possibilities until a solution was reached. In 5th grade classes, students used a representation model of the problem along with division to solve the problem. Annie said what she learned from elementary math is the idea of Concrete, Representation, and Abstract (CRA). She said she mostly started with the abstract way of teaching a concept because that was where she was most comfortable. Observing how elementary math would approach the problem made her more aware of using visual representations to build understanding. Another idea she suggested for visual representation was the use of Desmos. Using visual representations helps students gain conceptual understanding of concepts, and students are not punished for wrong answers.

Annie then talked about the overall perception of teaching mathematics. The progression of mathematics from Pre-K to AP courses suggests that a stronger math brain is needed to teach the advanced courses. She stated that how we think about teaching is different from knowing how to teach. A math teacher does more than present mathematical ideas. There are many mathematical tasks that a teacher encounters when deciding how to teach a lesson. Examples would be to decide how to connect the concept with previous concepts and future concepts and recognizing what is involved in using a particular representation. Another example of this would be teaching students how to count. Someone may know how to count, but not understand how to teach counting. In order to teach a student to count, some of the ideas that need to be considered are stable order, cardinality, order irrelevance, subitizing and unitizing. There is a progression that must be followed when teaching someone to count. Visualizations that happen in kindergarten have an impact on counting in the following grades. Graham Fletcher was given as a good resource to see the progression of math concepts at the elementary level. He has created videos that show how concepts like division progress from 3rd to 5th grade. His videos can be found at *https://gfletchy.com/progression-videos*.

## Little Kids, Big Math (cont.)

Annie then went on to talk about discourse at the elementary level. Many secondary teachers may believe that they can better discourse with students at the secondary level because of their advanced understanding of concepts. She had us do a little experiment. A video of a teacher at the high school level was shown that focused on her facilitating questions during a lesson. Then a video was shown with just the sound of another teacher asking the same type of questions. The questions were similar in both instances, but when the second video was revealed, it was a kindergarten classroom. At the elementary level, discourse does happen with students.

So, at the end of this journey, what a secondary teacher can learn from elementary school is that the teaching of mathematics is hard work. Understanding the progression of concepts from the early years can help us meet students where they are when they come to us at the middle and high school level. Conceptual learning helps students to be successful in mathematics at any level but happens over time, not all at once.

### November Board Notes By Beth Ann Ball

The MMC Board for 2022-23 met Wednesday, November 16, 2022, at 6:45 p.m. over Zoom. The board debriefed about the James Tanton in-person dinner meeting held at the Elks Lodge on September 16, 2022. While this year's MMC speaker calendar is set with a combination of meetings at the Elks Lodge and meetings over Zoom, plans need to be made now for the meeting format for 2023-24. A discussion was held about what the meeting format should look like. Work done last spring by a committee investigating options was revisited. A consensus was not reached, and the discussion will be continued at the next meeting.

MMC will once again be offering a scholarship to a senior in high school who plans on becoming a mathematics teacher. The MMC Conference of Workshops will be virtual on Saturday, February 4, 2023.

The next regularly scheduled meeting of the MMC Board will be on Wednesday, February 9, 2023, at 6:45 p.m. over Zoom. Please contact President Laura Kaplan, lkaplan@rdpanthers.org, for the Zoom link if you would like to attend. All members are welcome to attend the board meetings.



# Are You Interested in Serving on the MMC Board?

Past President Aimee Hart is assembling the slate of Directors and President for the next election. Anyone interested in serving on the Board should contact her at harta@nths.net.

# MMC Scholarship for High School Seniors

The Metropolitan Mathematics Club of Chicago is offering a \$2,500 scholarship for a high school senior who will pursue a career in the teaching of mathematics. The selected student will be honored at the MMC meeting in May.

A selection committee of MMC members appointed by the Board of Directors will determine the scholarship award recipient. To be eligible, applicants must be sponsored by a current member of MMC, submit the application and a transcript, request a letter of recommendation from a mathematics teacher, and respond to the prompts in point E below. All materials must be received by March 7, 2023. Feel free to email your submissions. You will receive a reply, so you know that it is being considered. The committee will evaluate applications and will make a recommendation to the Board of Directors as to the awarding of the scholarship.

The guidelines used for selection shall be:

- A. Demonstration of overall academic scholarship with an inclusion of at least eight semesters of college preparatory mathematics. (A minimum cumulative grade point average of 3.0, where A = 4)
- B. A statement of the intention to pursue a career in mathematics teaching.
- C. Indication of participation in extracurricular activities, especially those that may have a positive influence on a teaching career.
- D. A letter of recommendation from a math teacher who is familiar with the applicant's academic performance and their potential as a mathematics teacher. The teacher must be an MMC member.
- E. A short response from the candidate (1-2 paragraphs) to each of the following prompts.
  - a. What qualities do you possess that will help you in a teaching career?
  - b. Describe a teacher who has had an impact on your education.
  - c. Was there a time when you struggled with a concept in a math (or other) class? What did you do?
  - d. What was your favorite math class? Why?
  - e. Describe your favorite math problem. What makes it so great?
  - f. What excites you about mathematics?
  - g. Why do you want to teach mathematics? This response may be longer than the others, if necessary.

#### In addition to the application form (available at mmcchicago.org), applicants must also send:

- 1. A letter of recommendation from a mathematics teacher (preferably not sent through the applicant\*)
- 2. A current transcript for seven semesters of high school.\*
- 3. Responses to the prompts in point E above.

\*Letters of recommendation and transcripts may be sent by separate mail or e-mail.

Send to: Carrie Fraher Glenbrook South High School 4000 West Lake Avenue Glenview, IL 60026 (cfraher@glenbrook225.org)



#### Officers

Laura Kaplan, President Dan Hall, President-Elect Aimee Hart, Past President Sheila Hardin, Board Chair Beth Ann Ball, Secretary Carol Nenne, Treasurer

#### Directors

Beth Ann Ball (2021-2024) Maine South H.S., Park Ridge

Steve Condie (2021–2024) Illinois Mathematics & Science Academy (retired), Aurora

Sara Curran (2020–2023) Homestead Elementary, Aurora

Serg Cvetkovic (2020–2023) Thomas Kelly H.S., Chicago

Carrie Fraher (2021-2024) Glenbrook South H.S., Glenview

Danielle Grenader (2021–2024) Highcrest Middle School, Wilmette

Sheila Hardin (2020–2023) Oak Park & River Forest H.S., Oak Park

Aimee Hart (2022–2025) New Trier H.S., Winnetka

Maryjoy Heineman (2022–2025) Evanston Township H.S., Evanston

Laura Kaplan (2020–2023) Regina Dominican H.S., Wilmette

Liam Keigher (2022-2025) Larkin H.S., Elgin

Janice Krouse (2022–2025) Illinois Mathematics & Science Academy, Aurora

Carol Nenne (2020-2023) Lemont H.S. (retired), Lemont

Nicolette Norris (2022-2025) Chicago Vocational Academy, Chicago

Mary Wiltjer (2022-2025) Glenbrook South H.S., Glenview

#### Officials

Community Relations an	d Development Janice Krouse
Conference Co-Chairs	Nicolette Norris Maryjoy Heineman
Conference Registrar	Peter DeCraene
Finance Committee Chair	Mary Wiltjer
Historian	Serg Cvetkovic
Membership Coordinator	Mary Wiltjer
NCTM/ICTM Affiliate Representative	Steve Condie
Points & Angles Editor	Sara Curran
Publicity and Posters	Carol Nenne
Scholarship Chair	Carrie Fraher
Social Media Chair	Danielle Grenader
Webmaster	Peter DeCraene



# Metropolitan Mathematics Club of Chicago

Affiliate of ICTM & NCTM

# **MMC Virtual Conference**

given by teachers for teachers

Saturday, February 4, 2023 8:30 am – 12:10 pm

OPTIONAL POST-SESSION DISCUSSION 12:10 to 1:10 pm

### **Registration Now Open**

Register Until January 25, 2023

This conference is free for members. If you are not a current MMC member, the conference fee is \$35 (or \$22 for students) and includes an electronic membership.

## Follow MMC on Social Media!



#### Is your membership current? Check your mailing label to see when your membership expires. You can renew by mail with the form below or renew in person at the next dinner meeting.

NAME		PREFERRED CONTACT Check one: Home Work		Ν
HOME ADDRESS			7	Ξ
CITY	STATE	ZIP	fail c	
HOME PHONE	HOME E-MAIL		omplet	Iem
EMPLOYER			ed form	bersh
			and ch	ip an
СТТҮ	STATE	ZIP	eck to:	d Ch
WORK PHONE	WORK E-MAIL			ang
ELECTRONIC-ONLY MEMBERSHIP Check the box below for electronic-only membership. You will receive an email with a direct link to each issue of <u>Points &amp; Angles</u> when it is posted on the web site, often before paper copies are mailed. You will no longer receive <u>Points &amp; Angles</u> by mail.	MEMBERSHIP TYPE 1 year (\$35) Istude   Check one: 2 years (\$65) 11st yr t   3 years (\$90) Iretired	nt*, 1 yr (\$22) eacher*, 1 yr (\$22) d, 1 yr (\$28)	G]	ge of A
FORM USE Check one: New Membership Renewal Former Member Change of Address * The student and 1 <sup>st</sup> -year teacher memberships are only available as electronic-only.	MEMBERSHIP COST \$		MC 44 Poi lenviev	ddre
,,,,	SCHOLARSHIP FUND \$		tage I w, IL	ss Fc
	SPEAKER FUND\$		Run 60025	orm
Make check payable to <u>MMC</u>	TOTAL AMOUNT OF CHECK \$			

### **Upcoming Events**

Fri., Jan. 20	Pam Harris	Reaching More Students in Less Time (via Zoom)
Sat., Feb. 4		MMC Virtual Conference of Workshops (via Zoom)
Fri., Mar. 3	Scott Powers	The Evolution of Batting Statistics in Baseball (Des Plaines Elks Club)
Fri., May 5	Eugenia Cheng	X + Y: A Mathematician's Manifesto for Rethinking Gender (Des Plaines Elks Club)

Send upcoming event items to sburnett\_308@yahoo.com no later than the date of the MMC dinner meeting preceding the issue in which the item should appear. All items are subject to editing.

Your membership renewal date appears in the upper right corner of the label



MMC Glenview, IL 60025 Glenview, IL 60025