

Points & Angles

Newsletter of the Metropolitan Mathematics Club of Chicago
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5 Surprising Benefits of Number Talks in Secondary Math Classrooms

May Speaker Jackie Palmquist



Date/Time: Friday,
May 14, 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

It is 7 minutes into the start of an Algebra 2 class. Not one student has pulled out a pencil, a notebook or a Chromebook. It's the best math class I've observed all week: students are talking more than the teacher, describing their thinking, listening to their peers and owning their knowledge. Why? The students are engaged in a Number Talk - a short mental math routine in which students describe, decipher and defend their ideas about a single prompt. Number Talks are not a speed test for mental math but a routine that encourages creativity, builds deep understanding and elicits student thinking. Together, we will do real Number Talks, so you can experience the surprising benefits yourself. Leave your calculator and pencils at school!

Jackie Palmquist is the chair of mathematics for Metea Valley High School in Indian Prairie School District 204 in Illinois. With a passion for teaching and leading, she ensures that ALL students have access to high quality math education. She volunteers, presents and leads with local, state and national math organizations. In her 3 years as Director of Professional Learning for NCSM, the premier mathematics leadership organization, Jackie has led events focused on leading in mathematics through a lens of equity and social justice in mathematics teaching as well as building leadership through math coaches.

May Speaker (cont.)

Jackie is also the author of a series of books addressing Number Talks for secondary classrooms available at thumbsupmath.com. Her work and collaboration with secondary teachers support and promote Number Talk routines for easy teacher implementation. Her passion to share the power and benefits of this routine drives her to present and build meaningful professional development in person and virtually. She has led and presented both locally and nationally on the benefits of Number Talk routines for all learners.

Jackie earned a bachelor's degree in mathematics education from North Central College, attained a master's degree in educational leadership from Aurora University and is a National Board Certified Teacher.

Points From the Interior

By Serg Cvetkovic

I would be willing to bet dollars to donuts that every mathematics educator has been in a situation where he/she/they have looked for contextual (i.e., word) problems to assign and thought, “Man, all of these problems from the textbook or worksheets are terrible!” After all, who in their right mind would walk into a store and buy 108 cantaloupes? Finding contextual problems that are both meaningful and interesting can be quite the challenge. The solution? Write your own! Not to toot my own horn, but I was pretty darn proud of myself last week when a student from my Algebra II class emailed me to tell me that she thought the warm-up problems I assigned that day were fun and that I should assign more problems like that. Later that day at a department meeting, a colleague asked me what my secret was to writing such compelling problems.

For starters, I play many games that require strategy. I am an avid player of chess, Risk, Dungeons & Dragons, Clue, and Traveller. Additionally, I have been doing the daily *New York Times* crossword puzzle for about 20 years. Consistent immersion in games and puzzles strengthens the brain's strategic thinking skills which in turn, comes in handy for crafting interesting math problems. Hence, play more games and do more puzzles!

Secondly, most of what I read is speculative fiction. In other words, lots of science-fiction, fantasy, horror, and comic books. The world building, character development, conflicts, and journeys in such genres provide excellent source material for writing contextual problems. After all, if you were a modern-day child or adolescent, does a problem involving hunting zombies, casting spells, or intergalactic adventures not gravitate to you more than a problem about buying tape recorders or riding trains? Therefore, reading speculative fiction catalyzes the imagination and provides an abundance of source material, both of which are key assets to writing contextual problems.

Next, I try and keep up with the pop culture of the day. Instead of using generic names like Bob, Sally, or Jim, I use names of musical artists, professional athletes, and cartoon, video game, and comic book characters in my problems. From my experiences, seeing LeBron James, Captain

Points from the Interior (cont.)

America, or Pokémon in a sea of text tends to grab a kid's attention quicker than Bob, Sally, or Jim, and if that kid's attention is grabbed, he/she/they is/are more likely to read and think about the problem. That said, keep up with today's pop culture!

Finally, to create that perfect writing atmosphere that gets the creative juices flowing, I highly recommend turning off the TV, lighting a few scented candles, and putting some jazz or classical music on. No vocals. Strictly instrumental. If classical or jazz is not your thing, try some ambient house, trip hop, dream pop, or neo-soul.

Climate Change: Creatively Use Good Mathematics to Model the Reality

By Aimee Hart

On a cold Friday night in March, MMC welcomed Tom Reardon to speak at our webinar on climate change and how to creatively use good mathematics to model reality. Tom has been an active presenter in the math education world and attended Al Gore's Climate Reality Project in 2018. He went there looking for good, current data that he could use with students to do some modeling and make them socially aware of the problem of climate change. He took what he learned there and shared it with us along with some great ideas of how to use it in the math classroom.



He began with a discussion of the largest source of global warming, the burning of fossil fuels, and showed how it has increased dramatically since 1850. From this data, he created an activity for the math class that he presented to use, as well as the data required, which he shares on his blog. He has students graph the data, discuss the domain and range to help choose their window setting, and then has students talk about what type of function they could use as their regression.

He walked us through a quadratic regression and showed the results of cubic, quartic, and exponential regressions. He then talked about asking students to make predictions of what will happen in the future based on the regression. He emphasized the importance of student discussions of the graphs and justifying their choices.

His second activity looked at average summer temperatures over various time periods beginning with 1951-1980. He showed how the temperature distribution has shifted over time as he examined 10-year periods from 1980 to the present. Though he did not go into great detail on this activity, he did offer resources on his blog for attendees who wanted to learn more. He shared several startling statistics on the rising temperatures around the world before moving on to his final activity.



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March Talk Summary (cont.)

His third activity looked at declining ice mass in Greenland. He begins the activity by asking students to analyze the graph, think about why it increases, then decreases, and then try to model the data, first by writing their own linear equation without using the regression feature. He then used the calculator and asked us to interpret the slope and y-intercept of the regression line. He showed us how he modeled the data using the sum of a sinusoid and linear function.

After the three activities, Tom shared many more examples of climate change in the past 50 years and several other graphs that could be used in classes to explore the data such as various countries' energy consumptions vs. incomes per person. He left us with some advice from Bill Gates on what we can all do to help stop climate change as a citizen and as a consumer and some examples of what we, as math teachers, can do to share the information. There was a lot to digest and plenty of potential to develop great statistics activities using the data.

February Board Notes

By Beth Ann Ball

The MMC Board of Directors met on Thursday, February 4, 2021, at 7:00 p.m. via Zoom.

As of the meeting date, already 305 people had registered for the upcoming virtual Conference of Workshops to be held on February 13, 2021, with 4 of the sessions already filled at 100 registrants.

With memory space running out on the server that holds the MMC website, the board voted to increase the monthly fee to increase the required server space.

The board approved the slate for the 2021 election. Nominated for president is Laura Kaplan and for three-year terms on the Board of Directors are Beth Ann Ball, Steve Condie, Carrie Fraher, and Danielle Grenader. The ballots will be mail-in only.

The next scheduled MMC Board meeting will be on Sunday, May 23, 2021, at 4:00 p.m. via Zoom. MMC members are welcome to attend any board meeting. Anyone interested in attending the next board meeting, please contact President Serg Cvetkovic at scvetkovic@cps.edu for a link to the meeting.

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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.

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Mail completed form and check to:

MMC
1644 Portage Run
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Upcoming Events

Thursday, April 15:

MMC Ballots Due (must be postmarked by this date)

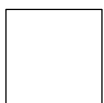
Friday, May 14:

Presenter: Jackie Palmquist

Presentation: 5 Surprising Benefits of Number Talks in Secondary Math Classrooms (via Zoon)

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
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