Points & Angles

Newsletter of the Metropolitan Mathematics Club of Chicago
Volume XLVII No. 4 January 2018

Let Us Teach Wondering

January Speaker

Paul J. Karafiol

From I-90 & Southbound I-294: Exit at I-190 West to O'Hare; Exit onto North Mannheim Rd.; Take Mannheim Rd. North 2.25 miles.

From Northbound I-294: Exit at West Touhy Ave.; Take Touhy Ave. to Mannheim Rd.; Turn right on Mannheim Rd.

Public Transit: Take the CTA Blue Line to the Rosemont Bus Terminal; Take Pace Bus #223 to Touhy Ave. & Lee Rd.; Walk East on Touhy to Mannheim Rd.

Friday, January 19, 2018
5:30 PM Doors Open, 6:00 PM Social Hour
7:00 PM Dinner & Talk

Fountain Blue Banquets & Convention Center
2300 Mannheim Rd., Des Plaines
(847) 298-3636
$43 for Members, $49 for Nonmembers

Reserve by Noon, Monday January 15, 2018
Online at WWW.MMCCHICAGO.ORG
or by phone at (847) - 486 - 4291

Paul J. Karafiol - Lake View High School

Paul has been committed to developing mathematical talent in young people since his first summer job as a counselor in the UChicago Young Scholars Program in 1988. He's taught math at Phillips Academy in Andover, Massachusetts, and at Providence-St. Mel School and Walter Payton College Prep in Chicago. Currently he serves as the principal of Lake View High School. Outside of school, Paul coached the Chicago-Area All-Star Math Team and was the head author of the American Regions Math League Competition from 2008 to 2017. Paul also co-authored two textbooks for high school students, the third editions of UCSMP Advanced Algebra and UCSMP Functions, Statistics, and Trigonometry. Paul is the co-founder and Board President of Math Circles of Chicago, which seeks to provide 5th to 12th graders in all communities of Chicago with opportunities to actively participate in doing novel mathematics in order to increase their mathematical power and to promote a lifelong love of mathematics. Awards Paul has received include the ICTM Fred Flener Award for Encouraging Mathematics Outside the Classroom, the MAA's Edith May Slyffe Award, and the Presidential Award for Excellence in Mathematics Teaching. He lives in Hyde Park with his wife, three children, and two dogs.

Abstract: Progressive math curricula see math as about persevering in solving problems, making connections, and thinking through complex tasks. These are important, but they miss a fundamental mathematical activity that ties them: wondering. When students extend, generalize, and make conjectures, they own the mathematics, becoming mathematicians themselves.
Note: This is v2.0 of the talk given at the NCTM Regional with all new mathematical tasks!

Points From The Interior

By Matthew Moran

Happy New Year! I hope your 2018 is off to a good start and that you had a chance to take some time away from work over the holidays. There is always a lot of discussion about New Year's resolutions this time of year. I'm not big on New Year's resolutions, but that's mostly because I'm too impulsive and impatient to wait until January first to make big changes. I've been known to make some big changes at any time of year.

If you're looking for something to commit to in 2018, I have some ideas. The first one is a no-brainer. Come to the 2018 MMC Conference of Workshops at Benet Academy on February 10. Don't sleep on this one, as registration closes on January 24. Workshops are filled on a first come, first served basis, so register ASAP! More information is available at mmcchicago.org/conference/. I won't be presenting a workshop this year, but I was given the opportunity to present one of the after-session mini-talks. A huge thank you to MMC board members Karen Lopez, Nicolette Norris, and Rose Sterr for their hard work in their roles as conference directors. This conference would not happen without all of their hard work.

Another great resolution would be to come to more MMC Friday Dinner talks in 2018. We have some exciting talks in store for you this spring, starting very soon on January 19 with long-time MMC member, Paul J Karafiol. MMC is also pleased to present MMC member Esther Song on March 16. You certainly don't want to miss the biennial MMC tradition of a talk from our very own Zalman Usiskin on May 11. Like I said at the December meeting, even if the talks are not good (don't worry, all of these upcoming talks will be phenomenal), there is so much more to a dinner meeting than just the talk. These dinner meetings are also about building community, meeting other teachers, and, of course, eating dinner.

There you have it, two simple New Year's resolutions that will expand your horizons, your professional network, and make you a better teacher. I wish you all the best in 2018, and hope to see you on January 19, 2018 at the Fountain Blue. Paul's talk will be great, and he wants you to know that if you saw his "warm-up" talk at the NCTM regional conference recently, the upcoming talk is is version 2.0 of the talk. It will include ALL NEW math tasks to generate creative wondering!

December Meeting Summary

By Nancy Powell

How to Bake Pi: An Edible Exploration of the Mathematics of Mathematics

Just in time for the holidays, December's speaker Eugenia Cheng had just the right recipe to show her love for food and math. Dr. Cheng is a mathematician and concert pianist and we were treated to a little Bach during her talk. She is currently a Scientist in Residence at the School of the Art Institute of Chicago and recently completed her first mathematical art commission, for Hotel EMC2 in Chicago.

Eugenia's research is in Category Theory. What is Category Theory? Eugenia describes it like this:

"Mathematics is the logical study of how logical things work. Category Theory is the Mathematics of Mathematics.

-Eugenia touch upon 6 topics that on the surface may not make you initially think of math but when she was done, math was definitely the focus of all of them.

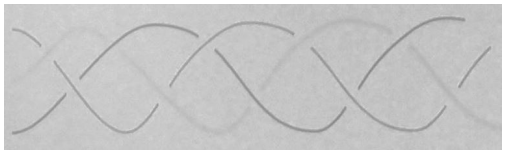
December Meeting Summary Continued

1. Bach - Bach prelude in G minor: Book 2 of the well-tempered keyboard

When looking at or listening to a piece of music, you can appreciate it for its beauty, sounds, and emotions that it can stir up. However if you sing or play each part of the song one part at a time, you begin to understand each part and then, the whole piece, when played together, creates new experience. Translate this into the learning and understanding of mathematics. You don't have to understand the math to appreciate the world around you, but if you do, you have the power and tools to change it, to fix it, and to make it even better!

2. Juggling

It's your first MMC meeting and next thing you know, you're juggling 3 balls while walking back and forth across the stage. Yep… that happened. Picture the path of each of the three balls as they make it across the stage. It might just look like this!



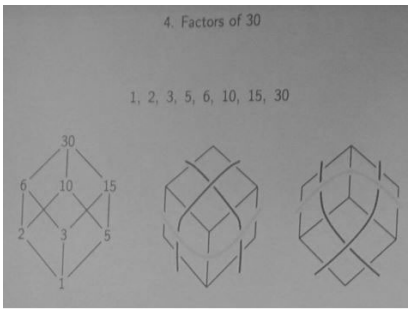
Describe this graphical representation.

3. Hair

What does the path of the balls remind you of? How about if you turn it 90 degrees? Eugenia turned her back to us and lo and behold, she was wearing this pattern in her hair via a long beautiful braid.

4. Factors of 30

This initially seemed like it might be a rather boring topic to add to this talk until it took on a whole different look at factors and factor trees and wrapping presents.

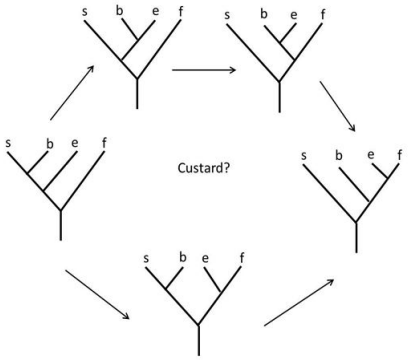


5. Cake – specifically a Battenberg Cake

Eugenia holds a PhD in pure mathematics from the University of Cambridge and won tenure at the University of Sheffield, UK and no cake is more British than a Battenberg cake. So it makes sense that a Battenberg cake would make it into a talk on mathematics, right? What is a Battenberg cake? It is most recognizable by the yellow and pink checkerboard cake tightly wrapped in a thick layer of marzipan. Battenberg Cake is believed to have been named in honor of the marriage of Queen Victoria's granddaughter to Prince Louis of Battenberg in 1884. Looking at the checkerboard pattern in this type of cake, see if you can see how it might relate to these tables.

x	1	-1			+	even	odd		x	tolerant	intolerant
1	1	-1			even	even	odd		tolerant	tolerant	intolerant
-1	-1	1			odd	odd	even		intolerant	intolerant	tolerant

Challenge yourself to think about how Battenberg cakes and flipping mattresses are related. If you get stumped, someone at the talk will make you an index card mattress and help you out.



6. Custard

Recipes for custard… will all of these produce great custard? Are they all equivalent if they each use the same amounts of each of the four ingredients – sugar(s), butter(b), eggs(e), and flour(f) but are put together in a different order There is something to be said about having the opportunity to "choose your own definition of equivalence." What are the pros and cons of each "recipe"?

MMC Scholarship

The Metropolitan Mathematics Club of Chicago is offering a $2,000 scholarship for a high school senior who will pursue a career in the teaching of mathematics. In addition, up to two Filliman Scholarships may also be awarded for the same amount (funded by a gift from the Filliman estate). The selected students, their parents and their sponsoring teachers will be invited to the May 19th MMC dinner meeting at which time the scholarship recipients will be honored. A selection committee of MMC members appointed by the Board will determine the scholarship awards. To be eligible, an applicant must submit the application, have an official transcript sent, and request a letter of recommendation from a member of MMC such that all of the materials are received by March 30, 2018. The committee will establish its own guidelines for evaluating applications, and will make a recommendation to the Board as to the awarding of the scholarship. No member of the selection committee may nominate nor recommend a candidate. A copy of the application is online and included in this issue of Points & Angles. The guidelines used for selection shall be: Demonstration of overall academic scholarship with an inclusion of at least eight semesters of college preparatory mathematics, a statement of the intention to pursue a career in mathematics teaching, indication of participation in extra-curricular activities, especially those that may have a positive influence on a teaching career, a letter of recommendation from a math teacher who is familiar with the applicant's academic performance and his or her potential as a mathematics teacher, and 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

** Up to 3 awards are possible based on candidate qualifications. The organization reserves the right to award fewer scholarships if these are not met.

In addition to the form on the next page, 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.

REMEMBER, the deadline for submission is **MARCH 30, 2018.**

For more information, check out our website at www.mmcchicago.org

Application for the MMC and Filliman Scholarships

Application Deadline: Received by March 30, 2018

Name: _____ Date: _____

Address: _____

_____

Email: _____

School: _____

School Address: _____

_____

Home Phone: _____ School Phone: _____

Sponsoring Teacher (must be a member of MMC): _____

Please complete the following:

Overall Grade Point Average (A=4, B=3, C=2, D=1, F=0): _____

Mathematics Courses and Grade Taken	Mathematics Course Grade Received
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Extracurricular Activities (inside or outside of school): _____

_____

_____

_____

I (*print your name*) _____ intend to pursue a career in Mathematics education.

Signed _____

Please send all information by 3/30/18 to:

Susan Brown
York High School
355 W. St. Charles Road
Elmhurst, IL 60126

phone: 630.617.2450 (day)
630.969.2477 (evening)
email: sbrown@elmhurst205.org

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MMC Board Report

By Lynn Bond

The MMC Board of Directors met on Monday, December 4th at Glenbrook South High School. NCTM Regional Chicago was the second-largest with 3,262 attendees. Three of the four ICTM award recipients are MMC members: congratulations to John Benson (Distinguished Life Achievement in Mathematics), Don Porzio (Lee Yunker Mathematics Leadership), and John O'Malley (Illinois Promising New Teacher of Mathematics).

MMC Conference of Workshops is accepting registrations until January 24th. The Conference will be held February 10th at Benet Academy in Lisle. See www.mmcchicago.org for more information.

he next MMC Board meeting will be held on Thursday, January 25th, at 6:30 p.m. at York High School in Elmhurst. MMC members are welcome to attend any board meeting. Anyone interested in serving as a Board Director, or in attending the next Board meeting, please contact Carrie Fraher at cfraher@glenbrook225.org.

More From Eugenia Cheng

In addition to her research in Category Theory and undergraduate teaching, Dr. Cheng's aim is to rid the world of "math phobia". It looks like she is well on her way to doing just that.

Want to read more from Dr. Cheng? Try these:

How to Bake Pi: An Edible Exploration of the Mathematics of Mathematics

Cakes, Custard and Category Theory: Easy Recipes for Understanding Complex Maths

Beyond Infinity: An Expedition to the Outer Limits of Mathematics

And watch for her *NEW BOOK* **coming in 2018**

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Metropolitan Mathematics Club Of Chicago

An Affiliate of ICTM & NCTM

invites you to attend the annual

MMC CONFERENCE OF WORKSHOPS

A conference in workshop format, given by teachers for teachers

Saturday, February 10, 2018, 8:30 AM – 12:45 PM

OPTIONAL FREE AFTER-LUNCH SESSION

1:45 PM – 3:00 PM

Benet Academy in Lisle, Illinois

FOR TEACHERS OF ALL GRADES K-16

Low Cost: $32 members; $38 non-members; $20 students

Professional Development Hours/ CPDU Credit Available

Visit www.mmc.org to register or for more information

MMC Membership and Change of Address Form

Mail completed form and check to:

MMC
7339 W. Ibsen St.
Chicago, IL 60631

NAME

PREFERRED CONTACT
Check one:
☐Home ☐Work

HOME ADDRESS

CITY | STATE | ZIP

HOME PHONE | HOME E-MAIL

EMPLOYER

WORK ADDRESS

CITY | STATE | ZIP

WORK PHONE | WORK E-MAIL

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Check the box below for electronic-only membership. You will receive an email with a direct link to each issue of Points & Angles when it is posted on the web site, often before paper copies are mailed. You will no longer receive Points & Angles by mail.

☐Electronic-Only Membership

FORM USE
Check one:
☐New Membership ☐Renewal
☐Former Member ☐Change of Address

MEMBERSHIP TYPE
Check one:
☐1 year ($35) ☐student*, 1 yr ($22)
☐2 years ($65) ☐1st yr teacher*, 1 yr ($22)
☐3 years ($90) ☐retired, 1 yr ($28)

MEMBERSHIP COST $

DONATIONS

SCHOLARSHIP FUND $

SPEAKER FUND $

TOTAL AMOUNT OF CHECK $

* The student and 1st-year teacher memberships are only available as electronic-only.

Make check payable to *MMC*

Upcoming Events

Fri., Jan. 19	Paul J. Karafiol	**Let Us Teach Wondering**
Sat., Feb 10	MMC Conference Of Workshops -	**Benet Academy Lisle, IL**
Fri., Mar. 16	Esther Song	**Math and Identity: How Our History Shapes Us**
Fri., May 11	Zalman Usiskin	**Mathematics and Diamonds: The Many Facets of Mathematics**

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Send upcoming event items to jharding@d120.org 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.

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