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## KYMAA Calendar

- Mar 31 2023 KYMAA Conference at Georgetown College  
TBD 2024 KYMAA Conference at Eastern Kentucky University  
TBD 2025 KYMAA Conference at Thomas More University

## Regional Conferences

- Oct 28 [OH MAA](#) in Cedarville, OH  
Nov 11 [KAS](#) in Morehead, KY  
Mar 09 [MAA-SE](#) in Conway, SC  
TBA [MO MAA](#) in Springfield, MO

## National Conferences

- Jun 03 [Mastery Grading](#) (virtual)  
Jun 16 [AWM](#) in Minneapolis, MN  
Jul 11 [SIAM Annual](#) in Pittsburgh, PA  
Aug 03 [MAA Mathfest](#) in Philadelphia, PA  
Aug 06 [ASA JSM](#) in Washington, DC  
Sep 28 [NCTM](#) (virtual)  
Oct 27 [SACNAS](#) (virtual)  
Nov 17 [AMATYC](#) in Toronto  
Jan 04 [JMM](#) in Boston, MA

## Maths Competitions

- Nov 02 [COMAP](#) HiMCM/MiMCM  
Feb 16 [COMAP](#) MCM/ICM

## The Twin Problems of Curriculum Modernization and Equity

By Dave Kung, Director of Policy, Charles A. Dana Center

Math community, we have a problem.

Actually, we have two.

Our curriculum is woefully in need of updating. The college math curriculum in the US was largely designed to produce a small number of STEM professionals who could beat the Soviet Union to the moon, armed with pencils, paper, and room-sized computers. The challenges we now face require a much broader range of mathematics knowledge. Statistics is more important than ever – in nearly every field of study. We are awash in data, which requires different mathematical (and programming) tools to wrangle. And two years of a global pandemic has exposed the importance of quantitative literacy in society at large.

The mathematics community's second problem is that our community continues to look very male and very white (and Asian) when compared to the rest of the population. The numbers don't lie – and they are not pretty. Despite decades of work by dedicated people, women continue to make up [less than 30%](#) of new mathematics doctorates in the US, a percentage that has actually fallen over the last decade.

Our problem is even worse when it comes to race and ethnicity. According to recent [census numbers](#), just over 18% of Americans identify as Hispanic or Latino, 12% as Black, and about 1% as Indigenous. Among undergraduate math majors, only [13.6% identified](#) as coming from those groups **combined**. Among American doctoral recipients, only [8% identify as Black, Latino, or Indigenous](#). And math requirements (especially College Algebra) serve as a major roadblock to upwardly mobile Black and Brown students seeking two- and four-year degrees.

To be clear, these horrendous statistics are not the fault of students from these groups. Our educational systems are stacked against them. For instance, many top math departments draw most of their math majors from the group of students who already took Calculus in high school. But of all the US high schools that primarily serve Black and Latino students, [only 33%](#) even offer Calculus. In terms of economics, students from families in the richest quintile are five times more likely to take Calculus in high school than students from the bottom quintile (37% vs. 9%).

Though seemingly separate, the twin problems of an antiquated curriculum and lack of diversity are intimately connected. When STEM fields were updated in the 1950s and 1960s and Calculus became the singular focus, the explicit goal was to produce a small number of highly competent professionals – implicitly assumed to be mostly white men. In other words, the system we have inherited does exactly what it was designed to do.

Read about moving ahead toward systemic solutions in the full post on MAA's Math Values Blog at [mathvalues.org](https://mathvalues.org)



## Annual Conference Recap

There were 29 contributed talks this year, 14 of which were from students. During the business meeting, [new officers](#) were elected to positions of Vice-Chair and Treasurer.



Hunter Chandler  
Bluegrass Community & Technical College  
Vice-Chair



Joshua Qualls  
Morehead State University  
Treasurer

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**Save the Date:** Next year's conference will be held **March 31–April 2, 2023** at **Georgetown College**.

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### Future Conference Locations

2024: Eastern Kentucky University

2025: Thomas More University

## KYMAA Call for Nominations

### KYMAA Officers

At the next Annual Meeting, KYMAA will be electing an officer to a 2-year term for the position of  
**Chair-Elect.**

At the Annual Meeting, KYMAA will be electing an officer to a 3-year term for the position of  
**Treasurer.**

Additionally, KYMAA will be electing an officer to complete the remaining 2-year term for the position of  
**Newsletter Editor**

After the Annual Meeting, the KYMAA Executive Committee will appoint an officer to a 3-year term in the position of

**Historian**

and would welcome volunteers and nominations.

Duties for each position are described in the [KYMAA Bylaws](#). Officers must be members of the MAA Kentucky Section, and can volunteer or be nominated in advance of the spring meeting via email by sending name, contact information, and a short biographical sketch to the [nominating committee](#) by mid-March. [Back to Contents](#)

## Student Challenge Corner

**2022.2:** A ribbon of length  $k$  is a rectangle with dimensions  $1 \times k$  for some natural number  $k$ . For what integers  $r$  can one cut a  $2022 \times r$  rectangle into ribbons of different lengths? (Prove it!)

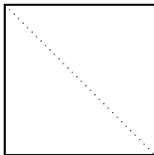
*Students:* Think you've figured it out? Write up your answer and email it to the [Newsletter Editor](#). Submissions received on or before **September 15** will be recognized alongside one correct submission selected to be published in the next newsletter (we'll take care of the  $\LaTeX$  formatting).

Have a challenge to contribute or willing to help review submissions? Email the [Newsletter Editor](#) to be included!

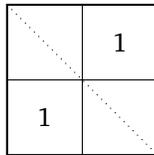
### Previous Challenge

**2022.1:** The unit square is partitioned into finitely many smaller squares, not necessarily of the same size. Consider the smaller squares that "intersect" the unit square's main diagonal (possibly at a corner). Is it possible for the sum of their perimeters to exceed 2022?

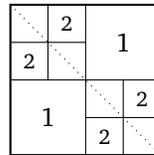
*Answer.* Yes. Consider the operation of *square-replacement* in which a square is replaced with four equal-sized squares (i.e. splitting the square into quarters). We call the two squares with sides  $\frac{1}{2}$  and overlapping the main diagonal only at a corner level-1 squares, and then square-replace the remaining squares. Next, we call the four squares with sides  $\frac{1}{4}$  and overlapping the main diagonal only at a corner level-2 squares, and then square-replace the remaining squares (leaving the level-1 squares in tact).



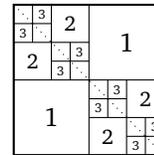
$k = 0$



$k = 1$



$k = 2$



$k = 3$

We continue in this way until we have 506 levels of squares. There are  $2^k$  squares at level  $k$ , each with side  $2^{-k}$ . Thus, the total perimeter of all level- $k$  squares is 4, and the total perimeter of all squares overlapping the diagonal is  $4 \cdot 506 = 2024 > 2022$ , as desired.

□



The mission of the Mathematical Association of America is to advance the mathematical sciences by:

- supporting effective mathematical education at all levels,
- supporting research and scholarship,
- providing professional development,
- influencing public policy, and
- promoting public appreciation and understanding of mathematics.



The Kentucky Section of the Mathematical Association of America is devoted to promoting and encouraging the study, the teaching, and the learning of mathematics in the state of Kentucky.

### KYMAA Officers

**Chair**

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**Chair-Elect**

Elizabeth Donovan  
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**Vice-Chair**

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**Secretary**

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Molly Dunkum  
Western Kentucky University  
Doug Chatham  
Morehead State University

**Teaching Award Committee**

Bethany Noblitt (chair)  
Northern Kentucky University  
Bradley Elliot  
University of Kentucky  
Alex McAllister  
Centre College  
Tom Richmond  
Western Kentucky University

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### Links of Potential Interest

[maa.org](http://maa.org)

[sections.maa.org/kentucky](http://sections.maa.org/kentucky)

[mathcareers.maa.org](http://mathcareers.maa.org)

[mathprograms.org](http://mathprograms.org)