



A message from the Executive Director, Tom Young

Thanks again to all students and coaches involved in Math League. Your dedication, even during the pandemic, is admirable.

Meet Five is Monday and Tuesday February 14th and 15th. Popular time slots will go from 2:30 to 4 and 4- 5:30. That seemed to work well for Meets 3 and 4.

The time slot sign up will be open Wednesday February 9th at 8 am

A pdf of the problems will be sent out early Friday, February 11th. Many divisions will be meeting in person and therefore the answers are included in the pdf. Be extra careful not to let answers out.

Important nuts and bolts information

Meet 5: Meeting in person is not discouraged. If the division meets in person, events and team test should be administered and graded as they were pre-pandemic. Scores should be entered via the Meet Op > Score Entry menu. Meet 5 awards will be mailed like last year, once all challenges are judged. Event D will be variations on the November 2021 AMC 12 A and B. The tests and solutions can be found at [AMC12 A](#) and [AMC12 B](#).

State Tournament: At the executive committee meeting in December, the committee decided to plan an in-person tournament. As a response to COVID, instead of gathering for a lunch banquet, teams **can bring** lunches to eat in their assigned team room. **We will not be providing lunches.** Masks will be required for all. No virtual participation will be allowed; if a team member tests positive for Covid, an alternate must be chosen to attend. If a team cannot muster enough participants, their spot in the tournament will be vacated. Individuals unable to attend the Invitational will vacate their spots in the Invitational. More information on state tournament procedures will be included in the information given to qualifying teams.

RECRUITMENT VIDEO Project (one submission!)

I have a goal of increasing the number of participating schools and I'd like your help. I'd like to compile film footage of students and coaches participating in and talking about Math League. My thought is to edit the footage together and send it to ADs, principals, and superintendents in the state, advertising our great activity. We'd have to get the video to students somehow, also.

So, help by taking iPhone videos, or ask the film students in your school to make Math Team one of their projects. See a more detailed list of ideas for footage later in newsletter. Get Creative! Tell your story! Videos may go in the Coach in a Box. Good luck in Meet Five! Go Math Team!

A message from Colin Gardner – Springer, Head of Problem Writing Team (HPWT)

Meet 4 is in the books, so we're down to the last regular Meet of the season! Once again, I was pleased to see most students make good progress by solving at least one problem correctly.

Topics covered on Meet 5 are probably my favorites of the entire season. Event A is particularly fun for me, as my love for mathematics was sparked from a love of puzzles. I'd encourage everyone who wants to do well on math competitions to study Counting and Probability (Event C topics), whether or not you'll be taking Event C on Meet 5: these come up frequently on other competitions such as the AMC 10/12.

Speaking of which, Event D problems are based on problems from the November 2021 AMC 12A and 12B competitions, so take some time to review and understand how those are solved!

Two problem solving techniques may be of particular value on Meet 5:

Carefully List All Possibilities:

When the number of cases is small, it's often possible to carefully list them all. There may be a slicker solution, but this will produce an answer (and perhaps insight that could help solve a more general problem). **Three of the four individual #1 problems on Meet 5 can be approached using this technique.**

Consider a Simpler Related Problem:

A related technique, when there are too many cases to reasonably consider, is to look for a simpler related problem and try to solve that. Typically, this involves replacing a large number with smaller ones, then solving and looking for a pattern that can be generalized to the original problem.

Best of luck on Meet 5 (and on the AIME for those who qualified for that!)

RECRUITMENT VIDEO Project Suggestions

1. Take footage of students solving an individual event. We will make a montage of several students solving problems and superimpose a timer in the corner.
2. Tell your story: Why did you get involved? What do you like about it? How do you deal with success and failure? What do you do for practice?
3. Describe and get footage of your Math League t-shirt if you have one.
4. What are your goals for the future? How will Math League help you attain them?
5. What are your goals for the League for this year?
6. What could be better about the League?



Be Creative!

Coach in a Box Initiative

An initiative to find more Math League participants in High Schools in Minnesota.

The Minnesota State High School Mathematics League is launching the initiative “Coach in a Box” to expand the number of students who reap the benefits of participation.

Currently, 166 high schools and over 2,500 students participate in the Math League. We know that there are many more students across the state who would benefit, grow in their confidence, and understand more mathematics, if there was a team at their school. We have seen that enthusiastic coaches start a team, find those students, and create a culture of mathematical “coolness.”

Our approach is to incentivize coaches and schools to create a Math League team. Our “Coach in a Box” will provide many tools for a new coach to find success while coaching a team. The “Coach in a Box” will provide:

- \$500 stipend for the coach for the 1st year
- \$500 grant to the school to assist with team development for the 1st year
- \$250 stipend for a coach from another school to mentor the new coach for the 1st year
- Resources and materials for the new coach to use to navigate the League procedures and topics
- Resources and materials for the new coach to use to recruit students and create a culture of coolness
- A thumb drive which houses the resources
- Access to a website that also houses the resources

If we can find enthusiastic coaches, students will follow!

If you are interested in starting a new team or donating to the effort, please contact Tom Young, the League’s Executive Director.

Email: tomyoungmathman@gmail.com or 763-568-0118

Go Math Team!

The Impact of Math Team

The call went out in the summer of 2020 to Math League alumni to Share Your Story. Here is one alumnus who shared

Mark Romanowsky

1999 Graduate of St. Cloud Tech

Undergraduate Degree: BS in Physics and Mathematics
Swarthmore

Graduate Degree: PhD, Experimental Physics, Harvard

Current Job: Machine Learning StartUp



It's amazing that the math league has been going for 40 years!

I participated as a student at St. Cloud Tech from 1994 to 1999 and enjoyed its many aspects: the competition itself, hanging out with teammates and other competitors, and the endless sessions of spoons, hearts, "sheepshead", and other card games between rounds. Many thanks to Bob Boatz for his organizing and coaching efforts. He set the stage for our little community and the many experiences and friendships that came from it.

I also competed with the MN ARML team, which was its own special experience, and would not have been possible without the MN math league. I still have contact with some teammates from those years! I particularly enjoyed events such as the "relay", where your problem depended on an answer from the teammate ahead of you and fed into the problem for your teammate behind you (fun times when someone drew a complete blank and just started passing arbitrary numbers), and the "power round" where the whole team worked together for an hour on some multi-part challenge. This was a great introduction to some of the collaborative aspects of math -- one of the bits that can be the most fun in "real world" applications.

After high school, I went to Swarthmore College for a double major in physics and mathematics. I tried my hand at the Putnam math contest and even scored some points once or twice.

I went to Harvard University for a Ph. D. in experimental physics, and I have worked in a variety of industry R&D roles since then: materials and process development for an electronics manufacturer, engineering of micro-fluidic chips for medical device startups, and currently writing machine-learning software for an AI/ML startup.

Like so many careers these days, mine has hardly been a straight line, and my math skills have been a handy arrow in the quiver all along.

Spreading the word about Math League

Greetings from Rena Erickson, our Social Media Manager.

Here's a list of things that would help in spreading the word about Math League in the virtual world:

- * Following the League's pages on Facebook, Instagram, and Twitter
- * Liking & commenting on posts (makes me feel good & it helps with the algorithms)
- * **Sending pictures of your team to mnhsmlsm@gmail.com**
- * Sending math-related articles/videos that are social media-friendly.
- * **Sharing stories about YOU, coaches making the League possible.**

Thanks for helping me share the awesomeness that is Math League.

Rena

Summer Coaches Conference 2022

Hall of Fame Induction

Dates: August 11 - 12

We've had to postpone our 40-year celebration due to the pandemic. We are planning to hold a celebration this August honoring our new Hall of Famers and toasting to another 40 years!

Make plans to attend!!

2022 Summer Math Institute

June 26 – July 1 Residential Camp for 10th – 12th graders

June 27 – July 1 Day Camp for 7th – 9th graders

The League plans to offer two one-week programs of the Summer Mathematics Institute in 2022. So far, it's full speed ahead!!

One would be for students entering grades 7-9 in fall of 2022. **The topic would be Infinity.** The other would be for students entering grades 10-12 in fall of 2022. **The topic would be Writing and Solving ARML Power Contest Questions.**

Stay tuned!

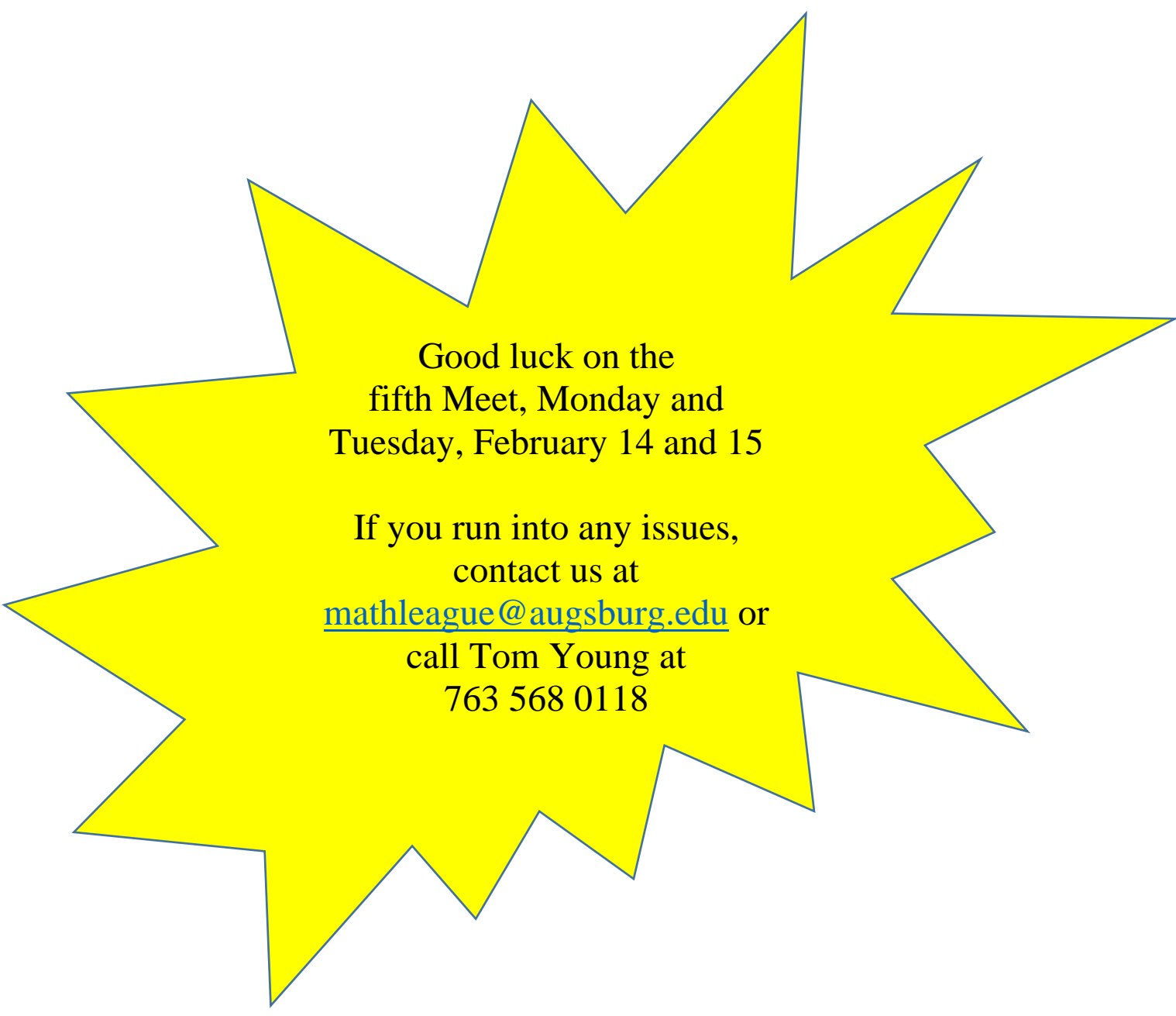
The Roberts Award Scholarship

The Roberts Award Scholarship(s) were established in honor of the League founder, Dr. Wayne Roberts of Macalester College.

The Scholarship(s) are offered to help offset the costs for students interested in attending an out-of-state math opportunity. They are offered once each year. A set amount of funds will be available each year, and multiple awards are possible.

Deadline to apply for this season is April 30, 2022

Applications can be found on our web site at: http://mnmathleague.org/?page_id=1033



Good luck on the
fifth Meet, Monday and
Tuesday, February 14 and 15

If you run into any issues,
contact us at
mathleague@augsborg.edu or
call Tom Young at
763 568 0118



MN State High School Math League

2022 State Tournament T-shirt Design Contest

Prize: **\$50 VISA Gift Card and a Free T-shirt**

How to enter:

Submit a one-color design for the t-shirt front.

The design should include the words:

MN State High School Math League
State Tournament
March 14, 2022

- Email your design by **Feb. 1st** to: mathleague@augsborg.edu
- Accepted file format: pdf only
- Include your name, grade and school in the email submission.
- Winner will be notified by Feb. 17th via email.

Since the state tournament is on PI Day, designs incorporating that fact will get heightened attention!

Email mathleague@augsborg.edu with questions



MN State High School Math League Math Team Video Contest

1st place: \$200 to school's math team

2nd place: \$150 to school's math team

3rd place: \$100 to school's math team

Video Guidelines:

Produce a 90 second video explaining why you like to be involved in the Math League. Videos might include: student interviews, teacher endorsements, sample problems, or video of practices/meets.

Video Entry Submission:

**Videos are due to the Math League Office
(mathleague@augsborg.edu)
by *March 1st, 2022.***

- **Videos contest entries must be sent and approved by the school math team coach.**
- **Winning schools will be notified by March 7, 2022.**
- **Winning videos will be shown at the State Tournament on March 14, 2022, uploaded to the Math League Facebook page, and may be used for other promotional purposes.**

Questions? Email mathleague@augsborg.edu

Problem Corner

an effort to spur conversation

If you'd like to contribute a problem or send in a solution, email tomyoungmathman@gmail.com

Student solutions encouraged!

Newsletter #30 Puzzler:

It is an **open question** whether any two distinct Pythagorean Triples can have the same product of their sides.

Newsletter #31 Puzzler:

From <https://www.math-only-math.com/fun-brain-math-puzzles.html>

8. In a certain code INKER is written as GLLGT and GLIDE is written as EJJFG. How will JINKS be written in that code?

- (a) GFOMU
- (b) HGMMU
- (c) HGOGH
- (d) HGOMU