



A message from the Executive Director, Tom Young

Hello all! Summer is here! It's SMI and Summer Coaches Conference time.

Here's Newsletter #6 for the 2023 – 2024 season. In it, notice these items:

1. Video Contest winners Past and Present
2. A message from Executive Director Tom Young regarding recruitment and maintaining schools
3. A message from Head Problem Writer Colin Gardner - Springer
4. SMI and Coaches Conference details
5. Meet Dates for 2024 – 2025
6. Plan for next year for Math League 2.0
7. A look back at the All State Team successes for the year
8. Problem Corner

Photos from the ARML Tournament



1. Math Team Video Contest Winners over the Past Few Years

Highly recommend watching them!!

[Math League Videos](#)

2. A message from Executive Director Tom Young

We are in need of more coaches.

Plain and not so simple.

As a result of many factors, our member schools have dropped from a high of 185 to now 160 schools. COVID hurt, but so has attrition due to not finding replacement coaches after retirement. While most coaches find a successor, some are unable [not from a lack of trying, but] from a lack of commitment from their colleagues.

Sharin Park and I continue our efforts to find new schools and retain current ones yet have limited success. We gain some here, lose some there.

It breaks my heart because there are students who could benefit greatly from participating in the League.

You can help.

Bend the ear of a colleague you know from a neighboring school that doesn't have a Math Team. Explain the benefits that not only do the students reap, but how Math Team coaching has improved your teaching.

Math League is a vibrant entity that can keep growing and reaching more students in the state. Thanks for doing a small part in helping it grow.

More importantly, thanks for being a coach and helping to nurture growth in your students.

Go. Math. Team.

3. A message from Colin Gardner – Springer

As mentioned in previous newsletters, our competition format will be changing next season. Most notably, the number of individual events is shrinking from four to three, and all students will participate in all three events.

This obviously required a significant reorganization of the topics list, which is completed, and was based heavily on input received during the topics list work session at last summer's coaches conference. At this summer's Coaches Conference, we will focus on examining the final topic list and the implications thereof. Please consider attending July 18th and 19th.

The Minnesota State High School Mathematics League has a long and proud tradition, and it's important to note that all of us involved in implementing this change are determined to preserve this. While the meet structure is changing and topics are reorganized, from a student's perspective this should still "feel like" Math League.

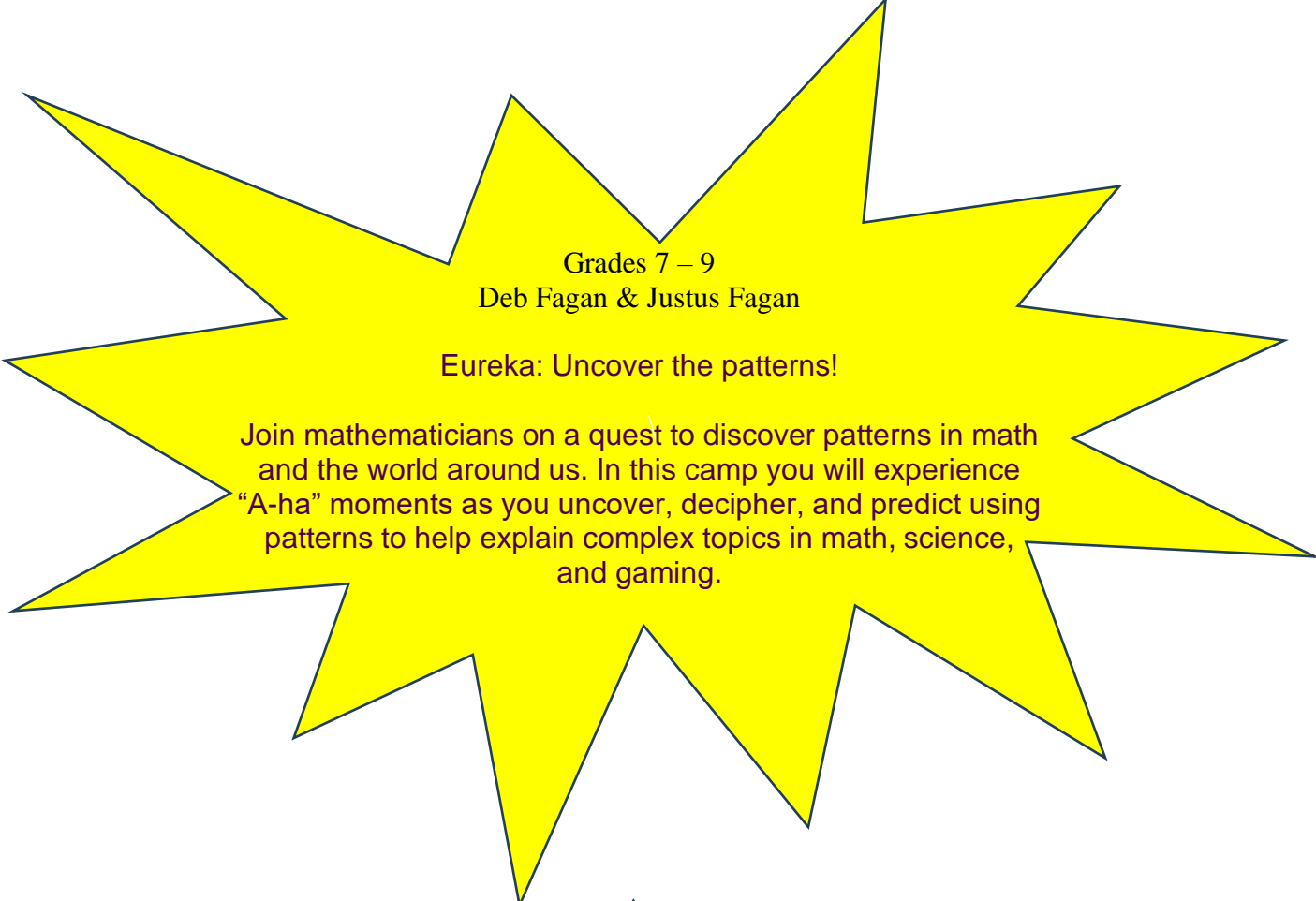
We're also committed to ensuring that there are accessible problems and topics on all three events across all five meets. That said, younger and less experienced students will initially find many unfamiliar topics - that's OK! Focus on helping them learn one or two topics per event each year, and their skills (and scores) will naturally increase over time. Success comes in many forms, and getting even a single problem correct is something to celebrate and build on.

None of this would be possible without you, the coaches. Now that the topics list is finalized, we'll be sending practice materials and resources to help you prepare your students for these changes. This starts at the Coaches Conference – another good reason to attend! Thank you for your dedication to the Math League!

Colin Gardner-Springer (colin@gardner-springer.com)

4. Summer Math Institute and Summer Coaches Conference

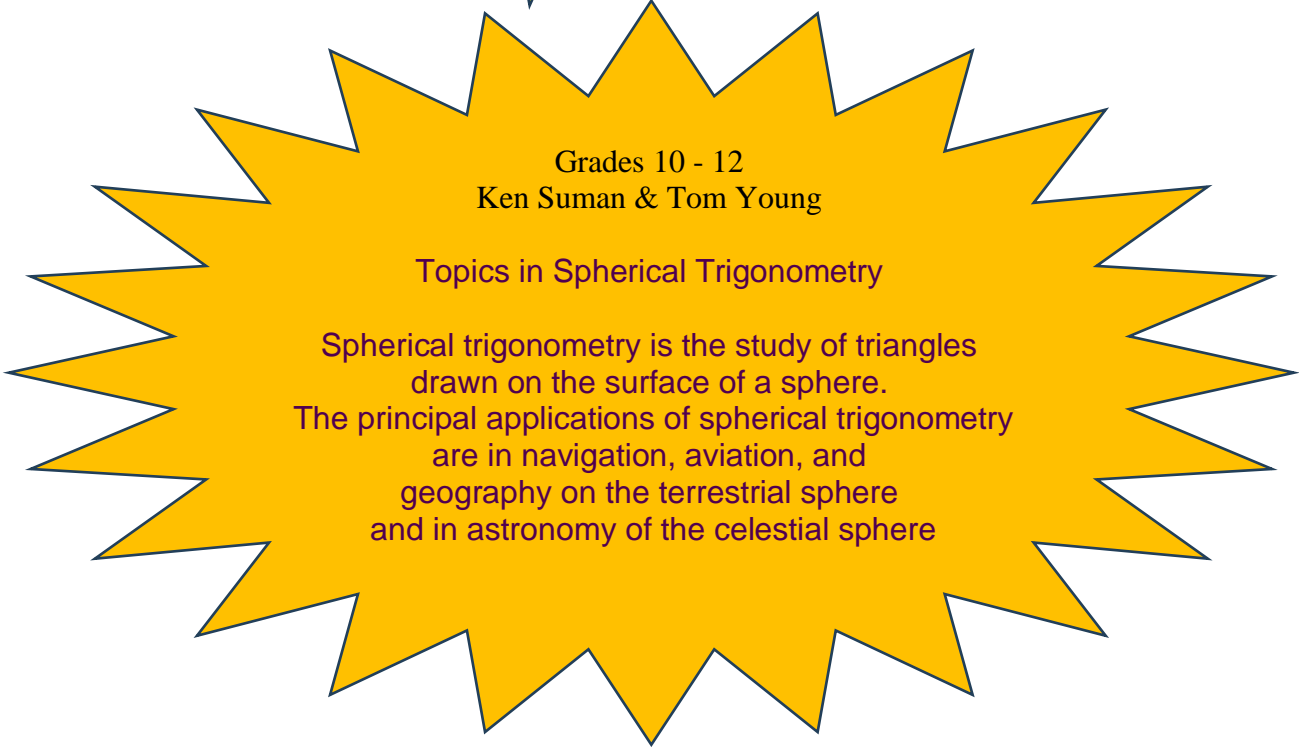
SMI: June 23 – June 28 Residential program \$750



Grades 7 – 9
Deb Fagan & Justus Fagan

Eureka: Uncover the patterns!

Join mathematicians on a quest to discover patterns in math and the world around us. In this camp you will experience “A-ha” moments as you uncover, decipher, and predict using patterns to help explain complex topics in math, science, and gaming.



Grades 10 - 12
Ken Suman & Tom Young

Topics in Spherical Trigonometry

Spherical trigonometry is the study of triangles drawn on the surface of a sphere. The principal applications of spherical trigonometry are in navigation, aviation, and geography on the terrestrial sphere and in astronomy of the celestial sphere

Summer Coaches Conference July 18 and 19

Topic: navigating the new changes to the League



LINK to register: [registration form](#)

5. Meet Dates for 2024 – 2025

In the second newsletter we asked for your opinion as to which of the following two schedules you would prefer

2024 - 2025
November 4, 2024
November 25, 2024
December 16, 2024
January 27, 2025
February 10, 2025
March 10, 2025



Due to changing the tournament venue to Spring Lake Park, and due to their restrictions on facility use, the State tournament has to be on March 10th. As a result, we will stay with the 3 (before holiday) – 2(after) format for the 2024 – 2025 competition year.

We are probably going to visit this again.

6. New Competition Structure for 2024 – 2025 and beyond

Overview: Due to the pandemic and the shifting nature of the League Operations the League Office thought it was necessary to evaluate our current operations to see if they fit the reality of today. In order to get the best data, the League Office distributed a survey that went out to all coaches, hosted an in-person retreat with 15+ coaches and the Executive Committee, and dedicated the majority of the Coaches Conference to this topic. Based on the robust discussions over the last few months, the Executive Committee drafted this proposal which the Board approved October 1st. These changes will go into effect in the 2024 – 2025 season

Timeline: These changes, adopted by the Board, will be implemented for the 2024-2025 school year.

Part 1: The structure of meets will be changed from 4 individual events to 3 individual events, ***with all students participating in all individual events.***

Rationale:

- Allows 9th and 10th grade students more access for advanced questions.
- Keeps the time frame for In-Person Meets the same
- Eliminates the disparity of choosing different events for different students.
- Retains the process of selecting the scoring team ahead of time.
- Allows for easier substitutions when students are absent.

Specific Details:

- The 3 individual events will each have 5 questions.
 - Each question will be worth 1 point.
 - There will be two “quickie questions” per event.
 - Power scoring will still be in place.
- Coaches will still need to set their scoring team prior to the Meet start.
 - No more than 6 of the 8 scoring team members shall be beyond the 10th grade (as is currently the case).
- Team Event Scoring
 - There will be 6 questions on the team event.
 - Each question will be worth 5 points.
 - A perfect team score at one meet will be 150 points.
- The topic list will be revised and submitted to the board for approval at a future meeting.
- Additional practice materials will be created, perhaps including a reorganizing of the problem archive.
- Coaches might be able to select a Junior Varsity team in the scoring system (implementation pending)

Part 2: Implement a “Guess the Interval” for Meet 1 and Meet 5.

Rationale: This event will increase competition fun for all students and the team aspect and bonding amongst students.

Specific Details:

- The League Office will create and provide an overview, scoring instructions, and instructional video on how to implement it.
- This will not be a part of the scoring system.
- This event will be available as an in-person, virtual, and hybrid version for Meet 1.
- This event will take place live at Meet 5.

7. All State Team Year in Review

At ARML, in Iowa City on June 1st, 2024, we officially closed the book on the 2023/24 season for the Minnesota All-State Math Team!

The season began with a remarkable performance at the Harvard/MIT Math Tournament. Led by Sam Kretzschmar (Spring Lake Park) and Henry Zheng (Edina), Minnesota's top team took 3rd in the team round and finished in 8th in the sweepstakes out of over 90 teams. Team members also enjoyed meeting up with alumni in Boston— fourteen former members of the team met us for lunch and to show us around campus!



In the Spring, we also sent three teams to Pittsburgh for the Carnegie Mellon Math and Informatics Contest. Angie Huang (East Ridge) and Austin Wang (Mounds View) finished in the top fifty individuals, and Sam Peterson (International School of Minnesota) helped his team to a top 10 finish in the proof-based algorithm round.



The following weekend, we had 40 students gather at St Paul Academy to compete virtually in the Stanford Math Tournament. Kevin Qiu (Wayzata) and Golden Peng (Century) led their team to a top 5 finish in the Guts round of that tournament.

Finally, we loaded up two charter buses and took the entire team down to Iowa City for the American Regional Math League (ARML). Our top team finished in third place at our site behind Texas and Chicago, and 7th nationwide in the B Division. Special congratulations to Eric Ding, an 8th grader from Century in Rochester, who placed in the top 25 individually nationwide.



The 2023/24 All State team saw participation from sixty-eight competitors from forty-one schools across Minnesota. We continue to look to expand the team, reach as many schools as possible, and grow math in Minnesota state-wide. Encourage students to apply next year— practices begin the week after the State Tournament!

Coach Sheffert and Coach Eggert

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 #43 Puzzler:

<https://www.hitbullseye.com/puzzle/hard-math-puzzles.php>

There are 3 colored boxes - Yellow, Black and Orange. Each box contains 2 envelopes. Each envelope contains cash - two of them contain Rs. 250000 each, two of them contain Rs. 150000 each and remaining two contain Rs. 100000 each.

There is one statement written on the cover of each box.

- * Yellow Box: Both, a yellow box and a orange box
- * Black Box: Both, a black box and a yellow box contain Rs. 250000 each.
- * Orange Box: Both, a orange box and a black box contain Rs. 150000 each.

Only one of the above 3 statements is true and the corresponding box contains the maximum amount.

Can you tell which box contains the maximum amount and how much?

Solution: Orange box contains the maximum amount Rs. 400000

As it is given that only one of the given 3 statements is true; assume in turn, each statement to be true & the other 2 false and check whether the corresponding box contains the maximum amount.

Let's assume that the statement on the Orange box is true. Thus, the given 3 statements can be interpreted as

- * At most one, a yellow box or a orange box contains Rs. 100000.
- * At most one, a black box or a yellow box contains Rs. 250000.
- * Both, a orange box and a black box contain Rs. 150000 each.

Going through all possible combinations, we can conclude that

Yellow Box: Rs. 100000 + Rs. 250000 = Rs. 350000

Black Box: Rs. 100000 + Rs. 150000 = Rs. 250000

Orange Box: Rs. 150000 + Rs. 250000 = Rs. 400000

You can test out for other two statements i.e. assuming Yellow box statement true and then Black box statement true. In both the cases, other statements will contradict the true statement.

Newsletter #44 Puzzler:

<https://www.hitbullseye.com/puzzle/hard-math-puzzles.php>

Q.9. A bag of Apricots was divided between Amitabh and Abhitabh. Abhitabh said, "It's not fair! You have 3 times as many Apricots I have." Amitabh said, "OK, I will give you one Apricot for each year of your age." Abhitabh replied, "Still not fair. Now, you have twice as many Apricots as I have." "Dear, that's fair enough as I am twice older than you", said Amitabh. Amitabh went to Kitchen to drink juice. While he was in Kitchen, Abhitabh took apricots from Amitabh's pile equal to Amitabh's age. Who has more apricots now?