

This email is going out to all coaches

Board members voted some changes to scoring at the September 29th Board meeting. Briefly stated:

- Weighted scoring will be used to rank the top students across the state and also the top students in each division.
- Coaches will be able to see the students' raw score and weighted score on the scoring website.
- The team score will be the sum of the raw scores of its 8 scoring team students (4 students per event, 2 events per student) as per the League Manual. Teams that do not follow the League guidelines will be penalized. (NOTE: this is not a change but a point of clarification)
- Section ranking of teams will be based on ordinal scoring, just like the ordinal scoring in divisions.
- Ordinals will be assigned based on team raw score.
- Changes will go into effect this year, 2019 – 2020

More specifically, the Board members adopted these proposals:

WEIGHTED SCORING:

Weighted scoring will be used to rank students statewide AND students within each division, according to the following formula:

$$\text{If correct, } (\text{weighted Question Score}) = (\text{Raw Score}) + \ln \frac{1 + (\text{number of students attempting the question})}{1 + (\text{number of students correctly answering the question})}$$

Else zero

At both levels, the numbers of students attempting and correctly answering the question will be based **only on the scoring teams**. That is, student statewide rankings will be based on all scoring members of all teams in the state. Division rankings will be determined based on scoring team members from teams within their division.

ORDINAL SCORING

Ordinal scoring will be used to determine section winners. Ordinals will be assigned based on team raw score. At-large invitations will still be determined by raw score.

The Board passed the proposals given these considerations:

For weighted scoring, consider:

- Sometimes students and coaches actively look for the "easiest path" to a high season score
- Some students are ranked lower on season rankings due to trying to tackle tougher problems
- We don't have a way to distinguish between students that have equal raw point totals
- We want to encourage students to grow mathematically

And given these League procedures:

- We invite the division winners and at-large students for a total of 50 students (and ties) to participate in the State Tournament Invitational
- We award scholarships to the top 3 individuals in the state

Therefore, the MN State HS Math League should rank individual students using weighted scoring.

For ordinal scoring in sections, consider

- We use ordinal scoring to rank teams in divisions
- We should be consistent and rank sections in the same way
- Ordinal scoring mitigates the effect of a team vastly outperforming the section in one meet

Therefore, the MN State HS Math League should use ordinal scoring to rank sections.

These proposals are made to find the best students and best teams. As always, please ensure that a proper environment for testing is provided at the meets. It is also very important that divisions follow the Challenge procedures.