

Math Wrangle

Where Mathematics Is a Spectator Sport

Although the concept of a Math Wrangle is somewhat novel to participants and spectators in the United States, this sort of event has been taking place in Russia for decades, where it goes by the title of "mathematical battle." The name Math Wrangle was suggested by Frank Farris and it captures the spirit of the event much better.

The format of a Math Wrangle is designed to engage students in mathematical problem-solving, promote effective teamwork, provide a venue for oral presentations, and develop critical listening skills. A Math Wrangle incorporates elements of team sports and debate, with a dose of strategy tossed in for good measure. For this reason Math Wrangles would seem to be the perfect complement to math contests, since the latter often focus on individual performance as opposed to dynamic mathematical interaction. Math Wrangles also expose students to skills with which they will need to become proficient as professionals.

During the first stage of a Math Wrangle members of each of two teams of students spend allocated time working together, in different locations, on a given set of hard problems. The problems should require an explanation, as opposed to just an answer, and should be somewhat open-ended, inviting multiple approaches or generalization. At the close of the solving period the two teams, a jury of three or more mathematicians and spectators convene for the presentation of solutions.

To oversimplify a bit, the two teams take turns challenging one another to present a solution to a specific problem. The receiving team may accept or return the challenge, in which case the problem's worth is increased. Then a member of the team which has accepted the challenge presents a five-minute solution, followed by a three minute response given by a member of the opposing team who may point out any flaws or omissions in the explanation, illustrate how that explanation might be shortened or made more elegant, or provide a generalization or an extension. The jury distributes the available points among the two teams, awarding any remaining points to itself. This process is repeated until a designated number of problems have been presented and every student has spoken.

The first public presentation of the math wrangle occurred at the Great Circles Conference, MSRI, April 2009, followed by the Great Math Wrangle at the JMM 2010, in San Francisco. Steve Dunbar, AMC Director (<http://amc.maa.org/>), watched that particular event and was so impressed that he decided to make it an integral part of the AMC package. To that end, he has organized a few local wrangles, and staged an Exhibition Math Wrangle at the JMM 2011 in New Orleans. It was greatly enjoyed by the participating students, the jurors, and the audience alike.

One of the many appealing features of this competition is that it can be held at any level starting as early as middle school (or even elementary school) – the organizers should simply choose appropriate set of problems suitable for their participants. But regardless of the grade level it is as engaging, exciting, and enjoyable as any of your favorite sports – come and see for yourself at the Golden Section Meeting on February 26.

A more detailed set of rules governing a Math Wrangle as well as the sample problem sets may be found at the SIGMAA on Math Circles for Students and Teachers web site

<http://wolfweb.unr.edu/homepage/keppelma/home.htm>