SIAM is seeking problem ideas for national high school math modeling competition

In 2016, more than 5,000 high school students in the U.S. participated in and submitted solutions to an open-ended, realistic, math-modeling problem presented to them in the M³ Challenge, an Internet-based applied math contest that occurs annually in February/March. The contest, which is organized by SIAM, poses a problem that students, working independently in teams of 3–5, must solve in just 14 hours.

Over the years, students have tackled timely issues such as making school lunches healthy, implementing recycling guidelines, persistent drought, the census, the stimulus package and job creation, energy independence, Social Security solvency, and choosing stocks for maximum gain. Coming up with great problem ideas year after year is not easy, and that’s where we’re hoping you can help.

Required problem characteristics

• Be accessible to 11th and 12th graders
• Be suitable for solution in 14 hours
• Provide the possibility for significant mathematical modeling
• Be of current interest and involve interdisciplinary problem solving and critical thinking skills
• Have enough data available for a variety of approaches and depth of solutions
• Be broken into a few parts with some parts easier than others so that all teams can make some progress
• Identify references to help students get started

Format your problem statement idea like previous Challenge problems, which can be found at m3challenge.siam.org/resources/sample-problems.

Problem structure

Within the problem statement, there should be three questions for teams to answer:
• Question One: The warm up — Every serious team can answer.
• Question Two: The guts — Framed so that every team can have some success and many teams can cover it well.
• Question Three: The discriminator — Many teams can do something, while only a few will have exceptional results.

We are open to any topic!

Of particular interest are problems based on timely, relevant, hot-button issues facing the U.S. and the rest of the world.

• Problems selected to be used as “the” Challenge problem receive a $1,000 honoraria.
• Problems found suitable to add to the M³ problem reserve bank receive $150; an additional $150 will be paid if it is used as a sample or resource on the Challenge website.

Previous problem titles

2006: Solving the Social Security Stalemate
2007: Beat the Street!
2008: Energy Independence Meets the Law of Unintended Consequences
2009: $787 Billion: Will the Stimulus Act Stimulate the Economy?
2010: Making Sense of the 2010 Census
2011: Colorado River Water: Good to the Last Acre-Foot
2012: All Aboard: Can High Speed Rail Get Back on Track?
2013: Waste Not, Want Not: Putting Recyclables in Their Place
2014: Lunch Crunch: Can Nutritious be Affordable and Delicious?
2015: STEM Sells: What is Higher Education Really Worth?
2016: Share and (Car) Share Alike: Modeling New Approaches to Mobility

To submit new ideas or get additional information, contact:

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The National Association of Secondary School Principals placed this program on the NASP National Advisory List of Student Contests and Activities since 2010.

SUBMIT your problem idea at m3challenge.siam.org/challenge/suggest-problems
Wanted: Challenge Problems
Problem Ideas Being Sought for High School Math Modeling Competition

Moody’s Mega Math Challenge
$150,000 in Scholarship Prizes!

Moody’s Mega Math (M³) Challenge is an Internet-based, applied mathematics contest for high school juniors and seniors. M³ takes place each year in late February or March. Teams of 3–5 students are given 14 hours to solve an open-ended, math modeling problem related to a real-world issue. Winners receive college scholarships totaling $150,000. Registration and participation are free.

The goal of the Challenge is to motivate students to study and pursue careers in STEM disciplines, especially applied mathematics, computational science, economics, and finance. The problem is revealed to the students only after they login on their selected Challenge day. Solutions are judged by professional mathematicians on the approach and methods used and the creativity displayed in problem solving and mathematical modeling.

Coming up with great problem ideas year after year is not easy, and that’s where we’re hoping you can help.

Required problem characteristics
• Accessibility to 11th and 12th graders
• Suitability for solution in 14 hours
• Possibility for significant mathematical modeling
• Topic of current interest involving interdisciplinary problem solving and critical thinking skills (e.g., humanitarian or environmental concerns, social media or online community challenges economic or financial problems)
• Availability of enough data for a variety of approaches and depth of solutions (but no easy answers found on the web)
• Problem is broken into a few pieces
• References are identified that will be helpful for getting students started
• Please submit problem statement idea in the format of previous Challenge problems

Problem structure
Within the problem statement, there should be three questions for teams to answer:
• Question One: The warm up — Every serious team can answer.
• Question Two: The guts — Framed so that every team can have some success and many teams can cover it well.
• Question Three: The discriminator — Many teams can do something, while only a few will have striking results.

Honoraria
• $150 for problems found suitable to add to the M³ problem reserve “bank”
• $300 for problems posted on the website as sample modeling problems
• $1,000 for problems selected from the reserve bank to be used as “the” Challenge problem

View “past problems” and other related items at http://m3challenge.siam.org/resources/sample-problems.

To submit new ideas or get additional information, contact:
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