

MSJ Math Club  
MMT Round-Specific Rules  
MMT 2014

## 1 Regular Day 1 and Day 2

These two rounds are used to determine placement for Mission Math Teams for the Stanford Math Tournament and Berkeley Math Tournament in the Spring of 2015. There is a positive integer number of questions every day split evenly among algebra, geometry, and advanced topics (combinatorics and number theory). All answers must be expressed in simplest form. All answers must be expressed in accordance with the answer conventions in the *Answer Conventions and General Rules* pdf.

Your placing is determined first by the number of correct answers, then by the hardest problem solved (determined by the number of contestants who submit a correct answer to the problem). Further ties will be broken by timed tiebreakers.

## 2 Estimation

Rules in the Answers Conventions section do not apply. For each question, teams submit a closed range  $[n, m]$ , representing a lower bound  $n$  and an upper bound  $m$  for the answer. The range must be a subset of the positive reals. A correct answer means that the actual answer is within the range given. Your score is determined by the following formula, (where  $n_i$  is the lower bound given for correctly-answered question  $i$ ,  $m_i$  is the upper bound given for question  $i$ ,  $x$  is the number of incorrect answers,  $k$  is the number of correctly-answered questions, and  $[x]$  is the greatest integer function)

$$Score = 2^x \left( 10 + \sum_{i=0}^k \frac{m_i}{n_i} \right)$$

Groups submit answers in real time (on slips of paper) and are given live feedback on their answers. Each group has a limited number of total submits, which will be announced just before the round starts. Only the last submit counts. If you do not submit for a question it will be counted as incorrectly answered. All actual answers will be positive real numbers. Lowest score wins.

## 3 Team

Similarly to the regular rounds, the team round will consist of a positive integer of short-answer questions. These questions will be solved as a team, where you get to discuss with your teammates about the questions. Team placing is determined by number of correct answers then hardest problem solved (as above).

## 4 Individual Fun Round

Special rules for this round will be announced right before the administration of this round. All you need to know is that it will be fun.

## 5 Power Round

The Power Round is a 60-minute exam with a series of proof-based questions on a single topic that is revealed and briefly described at the beginning of the round. As with the team round, you will be able to work with your team members in solving these problems. Each question will have a specified point value next to it, and team placing is determined by the total number of points. You may use the any result of a previous problem to solve a problem. All correct, rigorous proofs will get full points. Semi-rigorous proofs and progress may be given partial credit. All decisions of the judges are final.