

## **Info on submitting problems**

Please give us your ideas for cool math problems!!

### **How to submit problems**

You can submit problems by emailing it to our architect of the test (cmcar-chitect@ you know this part) or by putting hard copies in that the mailbox of the architect of the test either in sayles or in the math skills center box (this year our architect is Micheal Stoneman). While Latex'd problems are preferred, please submit in what ever format will allow you to submit the problems.

### **Include solutions**

Include a detailed solution to your problem! We will not accept problems unless they contain a decent explanation of how to solve it. We want students who are interested but couldn't figure out a problem to be able to read the solution and be able to understand how to find the answer.

### **What's in it for you? Free candy!!!**

That's right every Carleton student who submits a problem will be rewarded with something tasty in their Sayles mailbox within a week! More submitted problems will result in more bars of chocolaty (or other) goodness. (If anyone has an allergy let us know upon submission of problems.)

### **Expectations of Problems**

The problems on the CMC rounds must be able to reasonably be solved without the use of a calculator or knowledge of college level mathematics (e.g. no solution should require the use of calculus). Problems should not be based off a single theorem, meaning we *do not* want problems which are easy if a particular obscure theorem (like desargues theorem, or Fermat's last theorem) but become really hard without the theorem. The goal is to test mathematical intuition and problem solving, not a persons ability to memorize theorems. The problems should not be proof based, but ask for some type of numerical answer.

## Difficulty of problems

The problems should be geared toward 9<sup>th</sup> through 12<sup>th</sup> grade students. We want some problems that almost everyone is able to figure out, and ones tough enough that only a few people who come can figure out. You can use the sample problems to gauge this for yourself. If you are unsure, submit the problem, the planning board will go through the problems as a group tweak problems as necessary.

## The Rounds

The CMC has several different rounds the individual round, team round, power round and Carleton special. For the individual round we are looking for problems in the following six categories: (1) Algebra, (2) Geometry, (3) Number Theory, (4) Combinatorics / Probability, (5) Sequences / Series / Polynomials, and (6) Complex Numbers. The team round will contain problems in all of the individual categories but can be significantly harder and require more steps / insights. The team round is also a place to put problems which do not fit into the other categories. The power round will be created entirely by the “Power Round Synergizer” and students who come to the group meetings, do not worry about writing problems for this round. The Carleton special round is changed from year to year. This year it will contain estimation based problems where the goal is to get as close to the answer as possible, but where an exact answer would be extraordinarily difficult to find without the use of computers. The go to example for this is “Find the sum of the first million prime numbers.”