



## New Zealand Mathematical Olympiad Committee

### Camp Selection Problems 2010 — Instructions

*Solutions due date: 27th August 2010*

These problems will be used by the NZMOC to select students for its International Mathematical Olympiad Training Camp, to be held in Christchurch between the 9th and 15th of January 2011. Only students who attend this camp are eligible for selection to represent New Zealand at the 2011 International Mathematical Olympiad (IMO), to be held in the Netherlands in July 2011. The cost of the camp is \$460, which includes domestic airfares etc. as some sponsorship is available.

At the camp a squad of 10–12 students will be chosen for further training, and to take part in several international competitions, including the Australian and Asia-Pacific Mathematical Olympiads. The New Zealand team for the 2011 IMO will be chosen from this squad.

There are two sets of problems: junior division and senior division.

- If you are currently in year 12, **or** you have been a member of the NZIMO training squad, then you may **only** attempt the senior problems.
- If you are currently in year 11 or below, **and** you have never been a member of the NZIMO training squad, then you may attempt **both** sets of problems (and your results from both sets will be taken into account in the selection process).

*Note:* Students in year 11 or below who have previously attended a January camp, but not been a member of the NZIMO training squad, are no longer required to do just the senior problems.

#### General instructions:

- Although some problems seem to require only a numerical answer, in order to receive full credit for the problem a complete justification must be provided. In fact, an answer alone will only be worth 1 point out of 7.
- You may not use a calculator, computer or the internet to assist you in solving the problems.
- All solutions must be entirely your own work.
- We do not expect many, if any, perfect submissions. So, please submit all the solutions and partial solutions that you can find.

Students submitting solutions should be intending to remain in school in 2011 and should also hold New Zealand Passports or have New Zealand Resident status. To be eligible for the 2011 IMO you must have been born on or after 20 July 1991, and must not be formally enrolled in a University or similar institution prior to the IMO.

Your solutions, together with a completed Registration Form (overleaf), should be sent to

Professor Ivan Reilly, Department of Mathematics, University of Auckland, Private Bag 92019, Auckland Mail Centre, Auckland 1142

**arriving no later than 27th August 2010.** You will be notified whether or not you have been selected for the Camp by mid October.

If you have any questions, please contact Ivan Reilly ([i.reilly@auckland.ac.nz](mailto:i.reilly@auckland.ac.nz), (09) 923 8786) or Chris Tuffley ([c.tuffley@massey.ac.nz](mailto:c.tuffley@massey.ac.nz), (06) 350 9099 x3573).

*July 2010*

[www.mathsolympiad.org.nz](http://www.mathsolympiad.org.nz)

# Registration Form

## NZMOC Camp Selection Problems 2010

Name: \_\_\_\_\_

Gender:        male/female

School year level in 2010: \_\_\_\_\_

Home address: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Email address: \_\_\_\_\_

Home phone number: \_\_\_\_\_

School: \_\_\_\_\_

School address: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Principal: \_\_\_\_\_

HOD Mathematics: \_\_\_\_\_

Do you intend to take part in the camp selection problems for any other Olympiad camp? yes/no

If so, and if selected, which camp would you prefer to attend? \_\_\_\_\_

Have you put your name forward for a Science camp or any other camp in January? yes/no

Are there any criminal charges, or pending criminal charges against you? yes/no

Some conditions are attached to camp selection. You must be:

- Born on or after 20 July 1991
- Studying in 2011 at a recognised secondary school in NZ
- Available in July 2011 to represent NZ overseas as part of the NZIMO team if selected.
- A NZ citizen or hold NZ resident status.

**Declaration:** I satisfy these requirements, have worked on the questions without assistance from anyone else, and have read, understood and followed the instructions for the January camp selection problems. I agree to being contacted through the email address I have supplied.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Attach this registration form to your solutions, and send them to

Professor Ivan Reilly, Department of Mathematics, University of Auckland, Private Bag 92019, Auckland Mail Centre, Auckland 1142,

**arriving no later than 27th August 2010.**