MATHS MATTERS

Welcome to the newsletter of the Australian Mathematics Trust (AMT). Our vision at AMT is that all young Australians have the opportunity to realise their intellectual potential in mathematics and informatics. Through this newsletter we want to provide teachers with inspiration and resources for the classroom and highlight the endless possibilities and creativity of mathematics and informatics.

2015 AMC Medallists

The 2015 Australian medallists with Her Excellency Kerry Sanderson AO, Governor of Western Australia.

The Australian Mathematics Competition (AMC) sponsored by the Commonwealth Bank was held on 30 July and the results are now finalised. Medals were awarded to 69 students worldwide with 38 of those students obtaining a perfect score. Medals were presented in Indonesia, Malaysia, New Zealand, Philippines, Singapore and Australia. Her Excellency the Honourable Kerry Sanderson AO presented the Australian medals at a ceremony at Government House, Perth on Friday 6 November. Further details about these presentations can be found here www.amt.edu.au/hooray-for-our-amc-medallists/ .

Prize winners have been announced and schools should have received their results pack with certificates. Prize winners are also now listed on the AMT website at www.

amt.edu.au/mathematics/amc/ .

Among the Australian medallists was a female student, Akina Li, who obtained a perfect score and is only the fourth female student to obtain a perfect score in the history of the AMC. Also with a perfect score was Alex Gunning who gained his fifth and last AMC medal this year. Alex was identified through the AMC and four times represented Australia at the International Mathematical Olympiads, winning three Gold medals while in 2014 he also obtained a perfect score.

Congratulations to all who participated in the AMC this year and for those who enjoyed it, consider doing the Challenge or Enrichment programs next year.

2015 Solutions

2015 Solutions book includes the problems and complete solutions to all five papers of the Australian Mathematics Competition (AMC) sponsored by the Commonwealth Bank.

This book is a valuable resource for students interested in improving their knowledge of problem solving and their performance in the AMC. It can also be used by teachers for in-class activities.

It can be ordered from our online book shop here for $35 (incl GST).
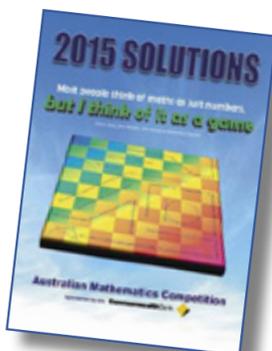
Enrichment Workshops

In conjunction with local AMT Awards Presentations, Mike Clapper and AMT volunteers, offered Enrichment Workshops for AMC prize winners and high distinction awardees.

Students from years 5–8 attended the workshops and covered topics such as graph theory, triangular numbers, topology, tiling problems, recurring decimals and special numbers.

While the mathematical intent was serious, each workshop was hands on and presented maths as fun. The workshops gave students the opportunity to meet other gifted students and encouraged them to think mathematically. Some students travelled long distances with their teachers to attend and it was encouraging to get positive feedback from the teachers and students.

AMT hopes to continue running these workshops for students and also to encourage teachers to attend training workshops to provide skills in maths enrichment.

Australian Intermediate Mathematics Olympiad

The Australian Intermediate Mathematics Olympiad (AIMO) is a four-hour examination and an open event for talented students up to Year 10.

The AIMO is one of the competitions used to determine which students are selected to a number of invitation only events, including other mathematics competitions, enrichment classes and training schools. It gives talented students an opportunity to be recognised and to participate in activities which will enhance their enjoyment and knowledge of mathematics.

This year 1440 students sat the exam and of those, 19 students obtained a perfect score, 26 won Prizes and 123 scored High Distinctions.

The top scores can be found on the AMT website at www.amt.edu.au/mathematics/mcya/aimo-results/

Here is some feedback and advice from our Executive Director on this year's AIMO:

It is very exciting to have doubled the numbers taking the AIMO over the last two years. More students are prepared to take on the challenge of this difficult exam and many are getting quite a few of the questions out. I would encourage teachers to point out to students (who may never have faced a really tough maths exam before) that the AIMO is meant to be quite challenging and if they have got out even one or two questions that is a really commendable performance, especially if it is their first attempt. It is a great idea to get talented Year 7s to give this a go because they will come back much better prepared the following year.

For those students wishing to do more preparation for exams like AIMO, the obvious thing to do is to tackle the Enrichment books (available through the Trust bookshop. In particular, competition questions are based on ideas which can be found in Euler, Gauss and Noether. Topics such as number bases and Diophantine equations, which are not a part of the regular school curriculum, are often encountered in problem-solving competitions and a little familiarity with these will be a great asset. Students can also obtain a book of AIMO past papers (1999 – 2013) from the AMT bookshop and each year's paper is also published in the The Australian Scene, *which is now available online at the end of every year.*

Australian Informatics Olympiad

The Australian Informatics Olympiad (AIO) was held on Thursday 3 September. Fifteen students (10 in the Senior division and 5 in the Intermediate division) gained perfect scores this year.

The Australian Informatics Olympiad (AIO) is a national computer programming competition held annually in early September. Students write short computer programs to solve three problems that vary in difficulty. The competition does not test computer knowledge, but is focused on problem solving through programming skills.

There are two papers: Intermediate for students up to Year 10, and Senior for students up to Year 12. Each paper consists of three problems, and students submit the source code for their solutions online during the three-hour contest.

The AIO is a suitable exercise for an IT class that has learnt some programming, or enthusiastic students who have taught themselves. Students will require some programming experience: in particular, they must be able to write code that can open, read and write to files; declare variables and arrays; use loops, conditional (if) statements and simple arithmetic operations. Those new to programming may find Python the easiest language to learn.

Further information including results can be found at www.amt.edu.au/informatics/aio/.

AMT Events for 2016

All dates are now confirmed for AMT events in 2016.
Below are listed all the open events with links to more information.
These competitions will be open for entry during 2016.

Mathematics Open Events
These events are open to all students who enjoy mathematics and are keen to challenge themselves.

Australian Mathematics Competition (AMC) Single-event competition, online or paper version, years 3–12 *Thursday 28 July*	**Click here for more**
MCYA Challenge Stage Three-week problem-solving program, years 3–10 *March – June*	**Click here for more**
MCYA Enrichment Stage Sixteen-week in-depth program, years 4–10 *April – September*	
Australian Intermediate Mathematics Olympiad (AIMO) Single-event competition, years 7–10 *Tuesday 6 September*	
Australian Statistics Competition (ASC) Single-event competition, years 7–12 *Project submissions by Friday 2 September*	**Click here for more**

Informatics Open Events
These events are open to all students who enjoy problem-solving and computer programming.

Computational and Algorithmic Thinking (CAT) formerly Australian Informatics Competition (AIC) Single-event competition, online or paper version, years 5–12 *Tuesday 22 March*	**Click here for more**
Australian Informatics Olympiad (AIO) Single-event programming competition, years 7–12 *Thursday 1 September*	**Click here for more**

Information about our Olympiad programs and invitational events can be found here:

Australian Mathematical Olympiad Committee Invitational Program

Australian Informatics Olympiad Committee Invitational Program

An A4 printable version can be found here. Please consider the environment before printing.