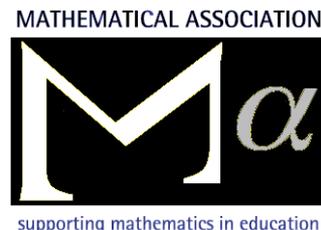


The Mathematical Association Secondary Education Mathematics Conference

Saturday 30th September 2017
Pathfoot Building, Stirling University



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| PROGRAMME | 09:00-09:30 | Registration and Coffee |
| | 09:40-10:25 | Keynote Address: Tom Roper |
| | 10:35-11:25 | Talks/Workshops/Discussion Groups 1 |
| | 11:30-12:20 | Talks/Workshops/Discussion Groups 2 |
| | 12:20-13:20 | Lunch |
| | 13:25-14:15 | Talks/Workshops/Discussion Groups 3 |
| | 14:20-15:10 | Talks/Workshops/Discussion Groups 4 |
| | 15:15 | Depart: Tea and Coffee available |

IMPORTANT INFORMATION FOR APPLICANTS

No invoices will be sent – so please do not ask

Receipt of the conference fee will book your place, and confirmation will be sent by email (email address required). Fees are non-returnable.

Cheques should be made payable to **The Mathematical Association** and sent to:–

Marcia Murray (2017 Stirling Conference)
The Mathematical Association
259 London Road
Leicester LE2 3BE
Tel 0116 2210013

An application form is enclosed.

PROGRAMME OPENING SESSION

Keynote Speaker:

Tom Roper
MA President 2017-18

Mathematics Subject Knowledge, what is it good for? Absolutely . . . !

When I went into initial teacher education I was struck by the number of students who would ask the question, ‘Why do I need a degree to teach mathematics?’, expanding this to mean to students no older than 16. Their question more or less assumed the response to the question in the Edwin Starr song of 1970, ‘War, what is it good for?’. So let us tackle this question, and refute the assumption, by looking at two pieces of mathematics, one on the school curriculum, one not. Be prepared to be involved as we burrow into a staple part of the secondary mathematics diet together with an example often used to inspire and frequently featured on posters.

Tom has always been passionate about mathematics and its teaching, firmly believing that, in the classroom, it's no good if it ain't fun (at least some of the time). He taught in a range of secondary schools in England, becoming head of department in two of them, before joining the staff of the School of Education at the University of Leeds to train teachers of mathematics. After 4½ years as Head of the School, he retired at Christmas 2010 to take up part time work teaching mathematics to undergraduate physicists. Tom was a LMS Holgate Lecturer; throughout his career he has given masterclasses and workshops in schools, led professional development courses, many as a member of the Leeds Mechanics in Action Project, and worked on The Mathematical Gazette for about 20 years.

For programme updates visit: www.m-a.org.uk

Workshops/Talks/Discussion Groups

A) Education Scotland Update

Lorna Harvey

This workshop will provide information on advice and guidance available from Education Scotland. This will include online resources for the Broad General Education and the Senior Phase in relation to numeracy and mathematics. Information about the National Numeracy and Mathematics Hub and Education Scotland's Mathematics National Networks will be shared.

B) Game to Learn?

Andrew Gallacher

After undertaking an independent review of how 104 Glasgow Primary schools took part in a study to determine whether practising mathematics skills via Sumdog online games would have any impact I review the findings and consider implications on pupil learning.

C) I don't want passive learners!

Linda Moon

From Numeracy to Advanced Higher some interactive tasks that are designed to get your pupils engaged and actively learning. A workshop with a selection of ideas (some old, some borrowed, some new) to enhance learning, deepen understanding and get them thinking.

D) Getting more from the UK Mathematics Trust

Steven O'Hagan

The UKMT Mathematical Challenges are much more than competitions. We will take a look at the range of high-quality materials available from the UKMT and discuss how these might be used every day in the classroom. Come prepared to have a go at some problems!

E) Ideas for developing geometrical thinking

Rachael Horsman

During the session we'll work through some lovely problems in geometry that lend themselves well to the primary and secondary classroom: ways to introduce and develop geometrical thinking and put knowledge into use, lots of practical ideas, ways to engage your imagination, historical and cultural links, and joining parts of the curriculum you may not have joined before.

F) Blended Learning and the Flipped Maths Class

Stuart Welsh

Blended learning involves some content being delivered online and some in a classroom. A flipped Maths class has learners watching online lectures in advance of class so they can spend the time in class working on problems. I have been running a flipped class with National 5 and Higher for 2 years. Hear why I believe this approach is so effective and how it can solve the challenges of pace, personalisation and split level classes. I will also explain the hardware and software you need to 'flip' your own class.

G) AH Maths: A Teacher's View

Phil Moon

Putting the new AH qualification under the microscope. Does it do what it says on the tin? Was the new qualification as it had been described previously? How have the syllabus changes impacted on teaching? What is proof by contrapositive?

These are among the questions that will be discussed. There will also be useful tips on how to prepare candidates for the exam and how best to use the marking instructions to inform teaching.

H) Pythagoras beyond the classroom

Donald Smith

We shall take a sideways look at Pythagoras and his theorem.

Do you have a favourite proof? How would you calculate square roots without that useful button on your calculator? Was Pythagoras just a mathematician? We shall discover an interesting connection with quadratic functions and we might even find a piece of toast on the hypotenuse!

I) Higher Statistics Award

Monica Kirson

This workshop will give you an honest account of: the prior mathematics achievements of the pupils; the value of the award for different Further Education courses; the timescale needed (timetable and year group); what materials were used to deliver this content; the problems which were overcome throughout; the positive reactions from the pupils themselves.

J) SOLAR e-Assessments

Stuart Winning

This workshop will highlight 'the good, the bad and the ugly' in using E-Assessments to monitor and track progress within the Lifeskills Mathematics courses and in the Numeracy Units. This workshop will focus on how SOLAR Assessments were used with 4th Year National 4 Lifeskills Mathematics courses, and also to complete Numeracy National 5 Unit Assessments with 3rd Year classes who are aspiring to National 5 Mathematics.

K) NRICHing mathematics in Secondary Classrooms

Charlie Gilderdale

At NRICH we want to encourage students to work and think like mathematicians. We have always offered engaging rich tasks for students, and we have recently improved our teacher support materials so that busy teachers can find suitable resources quickly and easily.

This session will offer delegates an opportunity to try out some new activities from the NRICH Secondary collection, to explore the opportunities they offer for deepening mathematical understanding, and to consider how they can be integrated into the school curriculum.

L) Come and make a . . .

George Connell

. . . great dodecahedron, Soccerball varieties or a parallelepiped.

All materials provided, just come and enjoy it. All welcome.

M) A Mathemagical Mystery Tour

Mike Smith

A whistle-stop tour around some of my favourite mathematical tricks and treats, picked up over 40 years of teaching and 30 years of Conferences! From the famous '1089' Trick, through Happy numbers and how to walk through a sheet of A4 paper, with a nod to Pythagoras and how to prove $\sqrt{2}$ is irrational. All mixed up with coloured cups, clothes pegs, class dojo and hinge-point questions.

Continued overleaf

N) Reduced Numbers, Patterns and Guessing a Person's Age

Craig Lowther

You probably know that you can use reduced numbers (the digital roots) to test if a number is divisible by nine; but did you know that you can also use them to check the accuracy of calculations and guess a person's age?

The workshop will introduce how you can use reduced numbers to support calculations and checks for accuracy as well as the concept of casting out 9s as a sanity check. You will also learn some numerical tricks to amaze your pupils, colleagues, friends and family and interesting introductions to pattern.

O) RSA codes

Adam McBride

Internet security is a matter of great importance in the modern world. How can you buy things online without someone emptying out your bank account ? The solution involves one of the oldest concepts in mathematics, that of a prime number. We shall look at the surprisingly simple ideas behind one particular type of code, called an RSA code, which is used extensively for encryption.

P) Exploring Japanese Temple Geometry

Chris Pritchard

For 250 years, Japanese mathematicians were cut off from the rest of the world. In recent times the problems they posed and solved have become known in the West, and many of them can be used in the secondary classroom. Explore some of them in this session and then take them back to try with your students.

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For your record

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| Your choices | 1 | 2 | 3 | 4 | 5 | 6 |
| Workshop/Talk/Discussion Group | | | | | | |

MA Bookstall

A stall will be available for delegates to see the wide range of material which is produced by the MA. It will be an opportunity to buy at special conference rates and also for non-members to join.

Come prepared!

Preview at:

<http://members.m-a.org.uk/Shop>