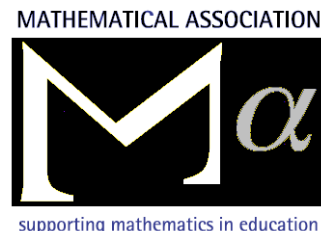# The Mathematical Association Secondary Education Mathematics Conference

Saturday 29th September 2018
Pathfoot Building, Stirling University

PROGRAMME		
	09:00-09:30	Registration and Coffee
	09:40-10:25	Keynote Address: **Maureen McKenna**
	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 (2018 Stirling Conference)
The Mathematical Association
259 London Road
Leicester LE2 3BE
Tel 0116 2210013

An application form is enclosed.

PROGRAMME OPENING SESSION

Keynote Speaker:

Maureen McKenna
Executive Director of Education, Education Services,
Glasgow City Council

Maureen started her professional career as a teacher of mathematics. She moved south but still has strong feelings about the subject. She says "It always saddens me to see mathematics getting negative press so I have thoroughly enjoyed the very positive publicity which surrounded Maths Week Scotland 2017. I am very optimistic that the reputation of mathematics as an essential skill and something that everyone can master will grow and grow through our collective efforts."

She will share with us some of her ideas on the future of mathematics education in Scotland.

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

Workshops/Talks/Discussion Groups

A) Education Scotland Update

Speaker TBA

A member of staff from Education Scotland‹s Numeracy and Mathematics Team will provide an update on national developments. This will include sharing information and developments in relation to Making Maths Count and Maths Week Scotland. Opportunities for online collaboration and access to resources will be highlighted. Effective practice from around Scotland will be shared.

B) Enhanced Practitioner in Mathematics

Andrew Gallacher

This 'New Routes' initiative being developed in the University of Glasgow, and funded by Scottish Government, is developing PGDE primary students to allow them to teach both Primary and BGE maths. The two year pilot project, in partnership with Glasgow City Council and GTCS, is being considered for other curricular areas as well as upskilling existing practitioners both with accreditation and Masters level award.

C) How to draw a straight line: from James Watt to Computer Algebra

Chris Sangwin

James Watt pioneered the development of steam power which was crucial to the industrial revolution, and to the raising of general living standards in the UK for all. His "parallel motion", a linkage mechanism, was one important technical advance, allowing the force of the engine to act in both push and pull directions. This talk will examine the mathematics of linkages, from both historical and modern perspectives.

D) Mathlete's Fruit: The Benefits of Maths Competitions

Chris Smith

Chris, ably assisted by his students, will guide you through the landscape of Maths competitions on offer to Scottish schools and the benefits you'll reap by giving them a go.

E) Geometrical Reasoning

Rachael Horsman

What is geometrical reasoning? Can we teach it? How do we teach it? What kinds of activities can we do in class that give opportunities for all learners to reason geometrically?

During this session we will try out a wealth of tasks that encourage geometrical reasoning and offer students opportunities to discuss and justify their mathematical ideas.

Delegates are also encouraged to bring along their own activities that they are willing to swap and share with others.

F) A research-informed model for teaching and learning Mathematics

Stuart Welsh

Advances in cognitive psychology and neuroscience mean we understand more about how we learn than ever before. Find out why some popular learning approaches are actually largely ineffectual and why some counter-intuitive strategies can make a big difference when learning Maths. In this workshop, we will explore some of the latest thinking on how we learn and will discuss strategies such as interleaving, distributed practice, dual coding, variation theory, the power of forgetting, and why more testing may actually be a good thing.

G)   Games, Games, Games

Phil Moon

Ever wondered how you can play games with your maths classes and make it part of the syllabus? We will look at a few of many that can be incorporated, so come along if you want to know more or fancy trying new or old games for a break.

H)   Sunrise, Sunset

Donald Smith

We all have a general understanding of how and why daylight hours vary with the seasons, but it is perhaps not as simple as we think. For example, did you know that the evenings start getting lighter in December before we reach the shortest day? We shall try to explain this and other phenomena by looking at the mathematics of planetary motion and consider how the sun's position in the sky really varies throughout the year.

I)   CL + CfE = Perfect Pals

Monica Kirson

Coperative Learning Plus Curriculum for Excellence Make Perfect Pals

Let's energise our lessons in Mathematics! This workshop will focus on putting fun into BGE and Senior Phase Mathematics lessons. Some familiar activities and some new ones too. Ideas you can use immediately. Come along to smile and laugh lots.

J)   Completing Numeracy Units using SOLAR

Stuart Winning

This workshop will highlight the different ways to assess Numeracy from National 3 level to National 5 focusing on how SOLAR e-assessments were used with 3rd Year classes who are aspiring to National 5 Mathematics and the impact it has on INSIGHT Data. This workshop will also look at how National 2 e-assessments have also been used in practice and will look further into how SOLAR is used to assess further units for Applications of Mathematics courses.

K)   How to fit rich tasks into a busy curriculum

Charlie Gilderdale or Alison Kiddle

NRICH aims to offer free resources for teachers who are committed to nurturing curious, confident, resourceful and enthusiastic learners of mathematics: https://nrich.maths.org/enriching

In this workshop for Secondary teachers, we will work on some favourite NRICH tasks that are closely linked to the curriculum, and consider how they can be embedded into schemes of work.

L)   Making algebra real

Keith Curry

Many pupils seem to have difficulties with algebra or rather with the notation. Either they use letters incorrectly or are reluctant to use them in the first place. In this session we will work on some activities that help children develop a better awareness of forming and manipulating algebraic expressions – as well as seeing structures in different ways. The level of difficulty will move from early Secondary to National 5 and will include making and drawing diagrams and proving some interesting results.

There will be more activities to take away as well as the ones we use in the session!

Suitable for P7 to S5.

M)   A Mathemagical Mystery Tour: The Sequence . . . Sequel!

Mike Smith

More of my favourite tricks and treats which never appear in a syllabus – but are great as; Starters, Enders, and Halfway through a Double period-ers!

A light-hearted look at getting students to 'think out of the box', to ask 'Why?', 'How?', 'What?'

Important questions such as 'How quickly does gossip spread?', 'Did Fibonacci branch out?', and 'Can Japanese multiply quicker than Gelosians?' will be answered!

Amaze a student in your class by telling them how much change they have in their pocket · · · all this and much, much more!

N)   Kahoot! and the quiz that stumped student teachers

Craig Lowther

A two for one workshop! Kahoot is a free website that lets you create and share quizzes that students can participate in with their mobile phone. In this session I will show you how to create a quiz and also share with you the mathematical questions that stumped a group of student teachers. Their solutions remind us of the areas of mathematics that pupils struggle with.

O)   Beauty in Mathematics

Adam McBride

A selection of favourite results involving simple properties of numbers and elementary geometry which illustrate why Maths, perhaps uniquely among the sciences, can be an art form, alongside its role as the language of the modern world.

P)   Tangrams

Chris Pritchard

We are all familiar with the 7-piece Chinese tangram but other sets have been designed at different times and in different places. Discover a little of their history, and explore some possible uses for them with pupils in P6-S2.

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For your record

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