

PHYSMATHS - Thursday 11th July 2019

Maths Workshop Information – Overview

Timetable for the Day

0845-0915	Arrival
0915-0930	Welcome
0930-1025	Workshop 1
1035-1130	Workshop 2
1130-1150	Break
1150-1245	Workshop 3
1245-1330	Lunch
1330-1425	Workshop 4
1435-1535	Keynote Speaker
1535-1545	Feedback
1545	Depart

All delegates need to choose which workshops they would like to attend from the information on the following pages. Please ensure that you only book one ticket per timeslot.

Please ensure that you do choose 4 workshops, there will be adequate time for breaks throughout the day and we expect delegates to make the most of the day and attend all 4 sessions plus the Keynote Presentation. Please note that we will be running some of the sessions more than once. When this is the case, the repeated session is clearly marked **REPEAT**. Please make sure that you don't sign up for the same workshop twice.

Please review the information about each workshop on the following pages to determine which sessions you would like to attend. For clarity, each workshop timeslot is outlined on a separate page. Once you have made your selection, please click the link below to book up specific workshops.

<https://www.eventbrite.co.uk/e/physmaths-workshops-2019-tickets-61158603028>
YOU WILL NEED TO ENTER A PASSWORD TO BOOK: PhysMaths2019 (case sensitive).

Should you have any queries, please email events@exeterms.ac.uk.

Please ensure that you have made your workshop choices by 9am on Monday 1st July.

WORKSHOP ONE: 0930-1025

Choose ONE of the following: -

Workshop Details	Workshop Lead
1A. Why are we doing this? Looking at different approaches to the common question of justifying why we study mathematical topics.	Will Halywn, EMS
1B. Geogebra for Beginners An introduction to how Geogebra can be used in your Mathematics classroom. Geogebra is a free application for graphing, geometry, statistics and algebraic manipulation. No prior knowledge necessary. An Intermediate Geogebra workshop is running during the Workshop 2 timeslot which you can subsequently attend if you would like but you do not have to do both.	Liam Cattle, EMS
1C. Real-Life Graphs Reading, interpreting and describing 'real-life graphs' is a key part of the maths GCSE, however, some students find this skill difficult. In this session we will look at how to teach these important skills and I will show you some fun activities to check students' understanding.	Lewis Roberts, EMS
1D. Problem Solving Angles and Bearings This will be a practical, hands-on session with ideas for introducing bearings in KS3 and extending to problem solving with angle properties and trigonometry in KS4.	Stuart Allen, EMS
1E. Interactive Whiteboards Thoughts and examples on how to use a Smart Whiteboard in a Mathematics lesson. Why an interactive board can be so much more than just something to write on.	Claire Willman, EMS



WORKSHOP TWO: 1035-1130

Choose ONE of the following: -

Workshop Details	Workshop Lead
<p>2A. Problem Solving and Reasoning In this session, participants will explore how problem-solving and reasoning form the core of effective learning in mathematics. You will consider recent research which supports such approaches, engage in a number of classroom-ready tasks and develop strategies to support students. <i>This session is being repeated in the Workshop 3 timeslot.</i></p>	Ray Huntley, University of Plymouth
<p>2B. Intermediate Geogebra Developing your Geogebra knowledge beyond the basics. Assumed knowledge: basic geometry skills (circles, points, lines, tangents and normal) and drawing curves and using sliders. This session will be aimed at using and discovering more tools and features of Geogebra to use in the teaching and learning of Mathematics at KS3 and KS4. It will be a hands-on session, with lots of examples of activities that can be used in the classroom. <i>Delegates who have attended Beginners Geogebra in Workshop 1 or who already have a basic knowledge of Geogebra can attend this session.</i></p>	Liam Cattle, EMS
<p>2C. Using Student Voice to improve Teaching and Learning in Maths Large numbers of pupils suffer from high levels of mathematics anxiety and often fail to persist when the subject matter is challenging. These are known to be significant contributors to low progress and attainment in mathematics which in turn has significant negative impact on children's career opportunities and confidence. This presentation suggests ways in which that this situation might be improved through teachers taking account of their students' thoughts on teaching and learning.</p>	Tom Ralph, University of Exeter
<p>2D. Using Cuisenaire Rods to help KS3 Children gain a Deeper Understanding of Maths The aim of this session is to demonstrate, through a range of practical activities, how Cuisenaire rods can support children's learning in a variety of areas. These include calculation, fractions, decimals, ratio, fluency with times tables, introducing algebra, patterns and sequences. These activities help to build deeper understanding and provide opportunities for reasoning for children of all abilities. <i>This session is being repeated in the Workshop 3 timeslot.</i></p>	Caroline Ainsworth, Senior Teacher & Maths Specialist, Stockland CofE Primary School
<p>2E. TSST Wrap-up <i>FOR TEACHERS WHO HAVE COMPLETED TSST COURSE AT EMS THIS ACADEMIC YEAR ONLY. IF YOU DID DO THIS COURSE, YOU <u>MUST</u> SELECT THIS OPTION FOR THIS TIMESLOT.</i></p>	EMS Staff



WORKSHOP THREE: 1150-1245

Choose ONE of the following: -

Workshop Details	Workshop Lead
3A. Problem Solving and Reasoning - REPEAT In this session, participants will explore how problem-solving and reasoning form the core of effective learning in mathematics. You will consider recent research which supports such approaches, engage in a number of classroom-ready tasks and develop strategies to support students.	Ray Huntley, University of Plymouth
3B. Effective Transition from KS2 to KS3 In this session we will discuss curriculum and pedagogical continuity at this point of transition. There will be the chance to consider how consistency in representation and language can support students in making a positive start to secondary mathematics. We will look at end of KS2 expectations and explore strategies to promote communication between schools.	Alison Hopper, MEI Primary Mathematics Specialist /NCETM Assistant Director
3C. Quadratics: Graphs, Equations and Proofs A hands-on look at quadratic equations. This session will look at the different forms that a quadratic equation can take, how representations can help us to determine the graphs and vice-versa, and how technology can be used to help illustrate these forms. We will also delve into student friendly proofs of the quadratic formula. Having a laptop, tablet or phone with access to the Geogebra or Desmos apps will be useful but not essential. <i>This session is being repeated in the Workshop 4 timetable.</i>	Margaret Harding, AMSP
3D. Using Cuisenaire Rods to help KS3 Children gain a Deeper Understanding of Maths – REPEAT The aim of this session is to demonstrate, through a range of practical activities, how Cuisenaire rods can support children's learning in a variety of areas. These include calculation, fractions, decimals, ratio, fluency with times tables, introducing algebra, patterns and sequences. These activities help to build deeper understanding and provide opportunities for reasoning for children of all abilities.	Caroline Ainsworth, Senior Teacher & Maths Specialist, Stockland CofE Primary School
3E. Mathematical Magic All magic is based in doing something that seems impossible but can actually be done by following certain steps. Topics: reverse engineering a magic trick, counting-based card tricks, learning maths card trick. This session will give teachers the chance to apply and develop their mathematical thinking skills to reverse-engineer magic tricks.	Zoe Griffiths, Think Maths



WORKSHOP FOUR: 1330-1425

Choose ONE of the following: -

Workshop Details	Workshop Lead
<p>4A. Multiplicative Reasoning Multiplicative reasoning underpins a significant proportion of the secondary maths curriculum. This session will draw on the work of the EEF funded ICCAMS (Increasing Competence and Confidence in Algebra and Multiplicative Structures) project to consider some of the misconceptions our students may have, and materials, strategies and representations to expose and address these misconceptions.</p>	Richard Perring, MA/ATM
<p>4B. Planning and Thinking for Learning: Using the 5 Big Ideas This session will be looking at the 5 Big Ideas of Teaching for Mastery:</p> <ul style="list-style-type: none">- Fluency- Variation- Representation & Structure- Mathematical thinking- Coherence <p>We will be looking at these concepts and explore a variety of ways to incorporate them into lesson planning, thereby supporting students to gain a better understanding of mathematical concepts.</p>	Ella Keddie, Boolean Maths Hub
<p>4C. Paper Folding and Problem Solving A simple piece of paper can be folded to build complex shapes and amazing structures, and provides a mental challenge which uses mathematical and spatial thinking skills. Topics: building a dodecahedron, geometry, 3D spatial thinking. This session will start with a simple dodecahedron building activity, followed by other tasks chosen based on ability level.</p>	Zoe Griffiths, Think Maths
<p>4D. Quadratics: Graphs, Equations and Proofs - REPEAT A hands-on look at quadratic equations. This session will look at the different forms that a quadratic equation can take, how representations can help us to determine the graphs and vice-versa, and how technology can be used to help illustrate these forms. We will also delve into student friendly proofs of the quadratic formula. Having a laptop, tablet or phone with access to the Geogebra or Desmos apps will be useful but not essential.</p>	Margaret Harding, AMSP
<p>4E. Developing Confidence This session will look at strategies for developing the confidence of students in the overarching themes of Reasoning, Problem Solving and the more difficult topics which they meet in GCSE. There will be practical activities and resources which participants can take away and use immediately with classes or keep in their 'tool box' of ideas for future lessons.</p>	Cath Moore (AMSP 11-16 Student Support Lead & GCSE PD Lead)



KEYNOTE SPEAKER: 1435-1535

Workshop 4 will be followed by our Keynote presentation, given by Zoe Griffiths from ThinkMaths, which all delegates will attend, entitled *Freaky Probability*. There is no need to make a booking for this presentation.

Overview

Humans are notoriously bad at correctly understanding probability from an intuitive sense. Teachers will be shown a range of interesting probability situations.

Topics: lottery probability, birthday coincidence, non-transitive dice, Penney's game.

This session will show some examples of unexpected results in probability, using familiar terminology.

The conference will conclude with a brief feedback session, with departure by 1545.

Data Protection

Exeter Mathematics School takes the protection of your information seriously and is fully committed to respecting the data privacy of all individuals.

The information you have given on this form will be used by the School, only in connection with Teacher CPD Programmes and its subsequent administration. The School may be obliged to share your personal information with certain agencies or organisations for the purpose of 2018-19 CPD programmes, subject to their own fair processing notices.

For further information on how Exeter Mathematics School collects, uses, and stores your data or how you can request access to your data – please refer to the Data Protection section on our website: <https://www.exetermathematicsschool.ac.uk/data-protection/>

