3 - 6 April 2018 University of Warwick #BCME9

www.bcme.org.uk

Under the auspices of

JMC

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JMC Participating Bodies

AMET

ATM

British Society for Research into Learning Mathematics

HoDoMS

Institute of mathematics & its applications

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MATHEMATICAL ASSOCIATION supporting mathematics in education

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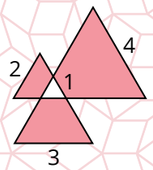
United Kingdom Mathematics Trust

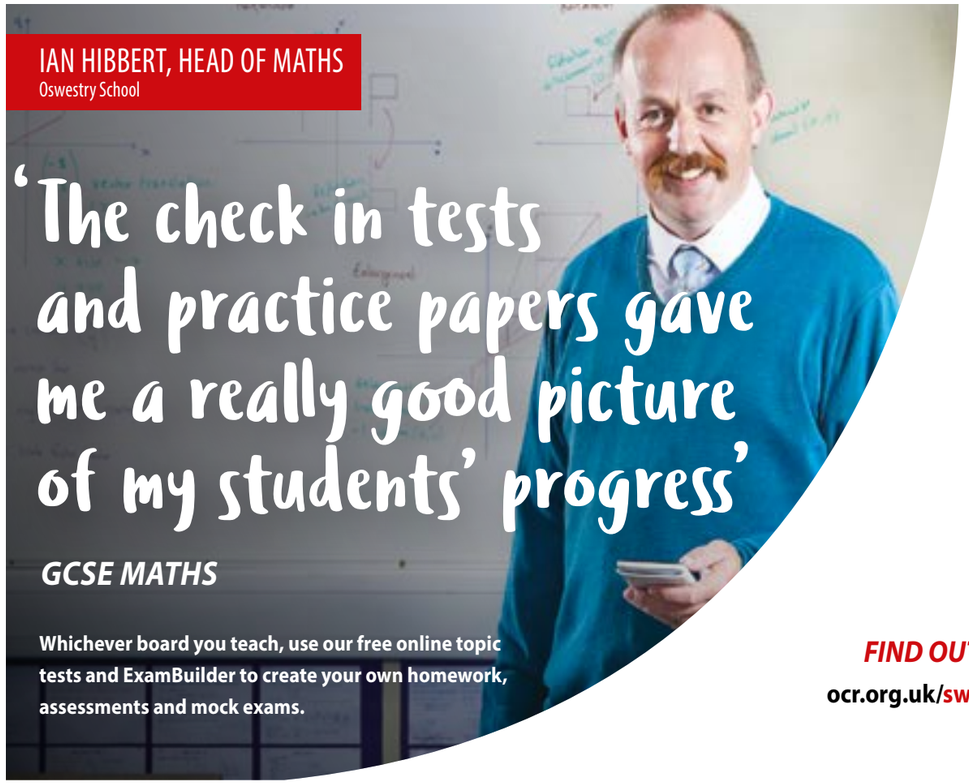
The team from Sheffield High School for Girls at the Team Maths Challenge National Final 2017

The diagram shows four equilateral triangles with sides of lengths 1, 2, 3 and 4.



The area of the shaded region is equal to *n* times the area of the unshaded triangle of side-length 1.

What is the value of *n*?



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Welcome from the Chair of the BCME Committee of the JMC

A warm welcome to BCME9 on behalf of the BCME Committee of The Joint Mathematical Council of the UK. We trust that you will find the conference an enlightening and engaging experience, and a time to network with old and new colleagues and friends, as we celebrate together the many facets of our work in Mathematics Education.

Our vision has been for an integrated programme of practitioner and research sessions in Mathematics Education that encourages delegates to engage in areas they are particularly at home with and in areas new to them, combined with engaging and stimulating workshop, discussion and plenary sessions. At a venue conducive for delegates to relax and network together in both academic and evening activities with nearby high standard University accommodation. We trust that BCME9 matches up to your vision for the event.

I would like to take the opportunity to offer special thanks to the BCME Committees and Administration teams of the Association of Teachers of Mathematics and the Mathematical Association for all their hard work in planning and preparation for this event.

David Martin, Chair of BCME Committee

The Vision for BCME9

Celebrating Mathematics Education

BCME9 is an integrated programme of practitioner and research sessions in Mathematics Education under the auspices of The Joint Mathematical Council of the UK (JMC), that encourages delegates to engage in areas they are particularly at home with and in areas new to them, combined with engaging and stimulating workshop, discussion and plenary sessions.

The JMC is a council of participating and observing bodies. It serves as a forum for discussion between its member bodies and for making representations to government and other bodies and responses to their enquiries, as well as running the British Congress of Mathematics Education and undertaking other initiatives. It is concerned with all aspects of mathematics education at all levels from primary education to higher education.

JMC is a Charitable Incorporated Organisation registered with the Charity Commission for England and Wales, registered charity number 1171223.

JMC

BCME Committee

David Martin - Chair of BCME Committee
Peter Ransom - Secretary of BCME Committee
Paul Metcalf - Treasurer of BCME Committee
Sue Pope - Chair of Programme Committee
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Marcia Murray - The MA Senior Administrator
Paul Glaister - JMC Chair

Contents

3	Welcome and vision	11-12	Tuesday (A)
4	Important Information	13 - 17	Wednesday (B, C, D, E)
7	Publishers' Exhibition	18 - 22	Thursday (F, G, H)
9	Programme	22 - 26	Friday (I, J)
10	Session information and rooms	28	Map

Important information

Bedroom Keys

You will be provided with a key or key card which will access your room and entry door to the residence. On the day of departure, keys can be left at Conference Reception (in the Students Union building), Rootes Restaurant or one of the boxes situated in the entrance halls of each residence.

Bedroom check in/out

Bedroom keys will be available from 1500 to 2245 at Conference Reception (Student Union). Rooms need to be vacated by 0930 on your day of departure. Luggage and belongings should be removed by that time. Luggage can be left at Conference Reception in the Student Union. Superior Accommodation is in Arden (approx. 20 mins walk from Warwick Arts Centre) - Collect keys from Arden, and return them to Arden on day of departure.

Wi-Fi access across Central campus

Conference Park delegates can access the "Warwick Guest" Wi-Fi network around campus and within their accommodation. Ask at Conference Reception (Student Union) or any member of the conference team for assistance if required.

Food and Drink

Breakfast: Standard residential is served in the Rootes Restaurant. Superior residential is served in Arden. Lunch and all day-time refreshments are served in the Warwick Arts Centre, Butterworth Hall and the Mead Gallery.

Evening meals will be served in the Rootes Restaurant, Conference Dinner will be served in the Rootes Panorama Suite.

Sports facilities

Guests have free access to Warwick Sport's premium leisure facilities on campus. For further information please see the website: www.warwac.uk/sport

Chaplaincy

The Chaplaincy is open to all, please ask at Conference Reception, Students Union for details.

Parking

You must display your parking permit at all times. Failure to do so could result in a fine. Overnight parking is not permitted in Car share spaces. Parking permits are not applicable in short stay parking spaces.

Out of Hours Emergencies

Contact any member of Warwick University Security by ringing **222222** from any internal phone.

Help desk

The help desk is situated at the ATM and MA bookstalls. For assistance during the conference or for any emergency situations please ring **07396065687**

If you have any issues with your bedroom you can contact Conference Reception, located in the Students Union Atrium.

OR in Schools promotes operational research and analytics to young people and their teachers.

BCME9 Bursaries

The London Mathematical Society (LMS), the Institute of Mathematics and its Applications (IMA) and an anonymous donor kindly provided a total of £5539 for bursaries. This was the amount that was distributed to 22 recipients, once they had paid the registration fee. The LMS money came from the Education Grants fund for Teacher CPD and the IMA money from the Education Grant Scheme. All recipients of the IMA grant have been asked to write a report for the IMA and those who received a bursary are encouraged to write a report for one of the journals published by the MA and/or ATM.

Peter Ransom, Secretary, BCME Committee of the JMC

To celebrate the launch of Autograph 4, (www.chartwellyorke.com/autograph), Douglas Butler is delighted to report that seven young teachers were awarded 50% bursaries to attend BCME. They were asked to outline what role they see for technology in their mathematics teaching, and what they hoped to gain by attending BCME. They will all be attending at least four of the ten sessions in the BCME ICT STRAND.

Douglas Butler, ICT Strand Coordinator

The Scottish Mathematical Council (SMC) has provided bursaries of £300 for each of five teachers and educationalists to attend the ninth BCME conference.

Chris Pritchard, SMC Chair

The United Kingdom Mathematics Trust awarded three full (£499) and three part-bursaries (£250) to teachers and educationalists.

Rachel Greenhalgh, UKMT

Publishers' Exhibition

The exhibition will take place throughout the day Wednesday 4 and Thursday 5 April. Exhibitors are located in either Butterworth Hall or the Mead Gallery in the Warwick Arts Centre.

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Vretta
vretta.com
Whizz Education
whizzeducation.com
YPO
ypo.co.uk

The MA and the ATM bookstalls will be open Tueday afternoon, all day Wednesday, Thursday and on Friday morning in the Warwick Arts Centre.

Events

The conference offers a number of social events to allow our delegates to get to know one another, relax and network outside of the main Conference programme.

Tuesday 3 April

A taste of **MathsJam**.
Socialise with like-minded self-confessed maths enthusiasts in the conference bar. Share puzzles, games, problems, or just anything you think is cool or interesting.
Panorama, Rootes Building

Wednesday 4 April

Back by popular demand, the quiz will be hosted with favourite presenters Colin Penfold and Tony Cotton!
Don't have a team yet? Turn up anyway and we'll help you find one. It's a great way to make new friends. We have some great prizes up for grabs so scrub-up on your general knowledge! Every answer contains a number or a homophone for a number.
Panorama, Rootes Building

BCME thanks La Salle Education for its generous sponsorship of some of the BCME Quiz Prizes.

Thursday 5 April

We invite those who have booked in advance to join us for the British Congress of Mathematics Education Conference Dinner in Panorama, Rootes Building.
Guests will enjoy a three-course meal with a glass of wine.
The after-dinner speaker will be Hannah Fry.

Association AGMs

The Association of Teachers of Mathematics, The Mathematical Association and the National Association of Mathematics Advisers hold their AGMs during BCME.

ATM in Chancellors 2, Rootes Building on **Tuesday 3 April - 1740 - 1900**

The MA in Chancellors 2, Rootes Building on **Wednesday 4 April - 1740 - 1900**

NAMA in Chancellors 2, Rootes Building on **Thursday 5 April - 1740 - 1900**

BCME Workshop

Take a break from the main programme to explore, investigate, discuss and be inspired by the BCME Workshop.
Open from early until closing time. Situated in the Fusion Bar, Rootes Building.

BCME9 Programme

TIMINGS	3 April 2018	4 April 2018	5 April 2018	6 April 2018
0900-1000	**Registration from 1000** *Ground Floor, Arts Centre* **Residential Delegates** Bag Drop-off and Key Collection (see website for times and locations: bcme.org.uk/info)	***Session B**	***Session F**	***Session I**
1010-1110		***Session C**	***Session G**	***Session J**
1110-1140		**Break** with Publishers' Exhibition		**Break**
1140-1240		**MA Presidential Address** Tom Roper *Panorama Room, Rootes Building* **and **Xtras**	**Plenary** Ruth Merttens *Panorama, Rootes Building* **and **Xtras**	**Closing Plenary 1140-1300** Paul Ernest *Butterworth Hall, Arts Centre*
1240-1400 *Timing may differ depending on day*	**LUNCH 1200-1400** with Mathematical Inspiration Exhibition	**LUNCH** with Publishers' Exhibition		**1300 Depart**
1400-1530 *Timing may differ depending on day*	**Opening Plenary 1330-1500** David Spiegelhalter *Butterworth Hall, Arts Centre*	***Session D**	***Session H**	
1530-1600	**Break** with Mathematical Inspiration Exhibition	**Break** with Publishers' Exhibition		
1600-1730	***Session A**	***Session E**	**OUP Sponsored Plenary** Berinderjeet Kaur *Panorama, Rootes Building* **and **Xtras**	
1740-1900	**ATM AGM** *Chancellors 2, Rootes Building*	**MA AGM** *Chancellors 2, Rootes Building*	**NAMA AGM** *Chancellors 2, Rootes Building*	
1800-2000	**Evening Meal** *Rootes Restaurant*		**Evening Meal** *Rootes Restaurant* *(Excludes conference dinner ticket holders)*	
1930-2030	**Plenary Panel** Mathematics Teachers Working and Learning Through Collaboration Chair: Alison Clark-Wilson *Panorama, Rootes Building*	**Plenary** Vicky Neale *Panorama, Rootes Building*	**Conference Dinner 1930** After Dinner Speaker: Hannah Fry *Panorama, Rootes Building* *(Conference dinner ticket holders only)*	
2100-	**A Taste of MathsJam** Katie Steckles *Panorama, Rootes Building*	**Quiz** Colin Penfold and Tony Cotton *Panorama, Rootes Building*		

Exhibition (Lunch and Refreshments) Location

Tuesday, 1100-1600
Mathematics Inspired Exhibition
Mead Gallery, Arts Centre

Wednesday - Thursday, 0900-1700 Publishers' Exhibition
Mead Gallery and Butterworth Hall, Arts Centre

See the above Programme for day-by-day refreshment and lunch times

***Session Classrooms: Humanities, Social Sciences, Panorama 1, 2 & 3 (Rootes Building) and Chancellors 1, 2 & 3 (Rootes Building)**
****Xtra Session Classrooms: Humanities, Social Sciences and Panorama 1, 2 & 3 (Rootes Building)**

BCME9 Session Information

Delegates are able to choose from a range of sessions throughout the Conference.
Sessions marked with an asterisk (*) are part of a combined group, made up of two to three individual sessions that have been scheduled together in one slot that can run for either 60 or 90 minutes depending on when they take place within the programme. When reading through the programme you may notice that some numbers within the session group have not been allocated. This is not an error and all available sessions within the programme are listed.

BCME reserve the right to alter the conference programme according to circumstances beyond its control.

Session Timings

A Tuesday 1600 - 1730
B Wednesday 0900 - 1000
C Wednesday 1010 - 1110
D Wednesday 1400 - 1530
E Wednesday 1600 - 1730
F Thursday 0900 - 1000
G Thursday 1010 - 1110
H Thursday 1400 - 1530
I Friday 0900 - 1000
J Friday 1010 - 1110

Social Sciences 0.08	A1	B1	C1	D1	E1	F1	G1	H1	I1	J1
Social Sciences 0.09	A2	B2	C2	*D2			*G2	H2		J2
Social Sciences 0.1	A3	B3	C3	D3	E3	F3	G3	H3	I3	*J3
Social Sciences 0.11	A4	B4	C4	*D4	E4	F4	G4	*H4		J4
Social Sciences 0.13	A5	B5	C5	D5	E5	F5	G5	*H5	I5	J5
Social Sciences 0.17	A6	B6	C6	D6	E6	*F6	G6		*I6	J6
Social Sciences 0.18		B7	C7	D7	*E7	F7	G7	*H7	I7	J7
Social Sciences 0.19		B8	*C8	D8	E8	*F8	*G8	*H8	*I8	J8
Social Sciences 0.2	*A9	*B9	*C9	*D9		F9	G9		I9	*J9
Social Sciences 0.21	*A10			D10	E10		G10	H10	*I10	J10
Social Sciences 0.28	A11			D11	E11	F11	G11	H11	*I11	J11
Social Sciences A023	*A12	B12	*C12	D12	E12	F12	*G12			*J12
Social Sciences 1.11/15	A13	B13	C13	D13	E13	F13	G13	H13	I13	J13
Humanities 0.02	*A14	B14	C14	D14	E14	F14	G14	H14	*I14	J14
Humanities 0.03	A15	B15	C15	D15	E15		G15	*H15	I15	J15
Humanities 0.43	*A16	B16			E16	F16	G16	H16	I16	J16
Humanities 0.44	A17	B17	C17	D17		F17	G17	H17	I17	J17
Humanities 0.56	A18	B18	C18	D18	E18	F18	G18	H18	I18	J18
Humanities 0.58	A19	B19	C19	D19	E19	F19	G19	H19	I19	*J19
Humanities 0.6	A20	B20	C20	D20	E20	F20	G20	H20	I20	J20
Humanities 1.02	A21	B21	C21	D21	E21	F21	G21	*H21	I21	J21
Humanities 1.48	A22	B22	C22	D22	E22		G22	*H22		J22
Humanities 2.03	A23		C23	D23	E23	F23	G23	H23	I23	J23
Humanities 2.44	A24	B24	*C24	D24	E24	F24	G24	H24	I24	J24
Humanities 3.44	*A25	B25	*C25	D25	E25	F25		H25		J25
Humanities 3.55	A26	B26	C26	D26	E26	F26	G26	H26	I26	J26
Humanities 3.56	A27	B27	*C27	D27	E27	F27	G27	H27	I27	*J27
Humanities 5.45	A28	*B28	C28	D28	E28	F28		H28		J28
Rootes - Panorama 1	A29	B29	*C29	D29	E29	F29	G29		I29	J29
Rootes - Panorama 2	A30	B30	C30	D30	E30	F30	G30	H30	I30	J30
Rootes - Panorama 3	A31		C31	D31	E31	F31	G31	H31	I31	J31
Rootes - Chancellors 1	A32	B32	C32	D32	E32	F32	G32	H32	I32	J32
Rootes - Chancellors 2		B33	C33			F33	G33		I33	
Rootes - Chancellors 3	A34	B34	C34	D34	*E34	F34	G34	*H34	*I34	J34

Tuesday 3 April

1200 Lunch - Mead Gallery, Warwick Arts Centre

1330 - 1350 Official Opening - Butterworth Hall, Warwick Arts Centre

Paul Glaister - JMC Chair

Paul is Professor of Mathematics and Mathematics Education in the Department of Mathematics and Statistics at the University of Reading. As well as 38 years' teaching and leadership experience, his 430+ publications span research in numerical analysis, mathematics/science education, and teaching and learning. Paul is a regular speaker at national conferences and workshops and is a member of many advisory boards and committees. He is a Fellow of the IMA, Chartered Mathematician and Chartered Scientist. Paul has briefed over 50 universities on Core Maths and post-16 mathematics, following an invitation to them from DfE/B(E)IS to find out more about Core Maths. As Chair of the Joint Mathematical Council of the UK (JMC), he is an an Ex-Officio member of the BCME Committee.

1350 -1500 Opening Plenary - Warwick Arts Centre Butterworth Hall

Professor Sir David Spiegelhalter FRS

Teaching Probability and Statistics in the Age of Data Science and Fake News

David Spiegelhalter is Winton Professor for the Public Understanding of Risk and Fellow of Churchill College at Cambridge University. As Chair of the Winton Centre for Risk and Evidence Communication, he works to improve the way in which risk and statistical evidence are taught and discussed in society.

1500 - 1600 Break and Mathematical Inspiration Exhibition

1600 - 1730 Session A

A1 - ICT Strand 01: New to tech? - **Douglas Butler**
A2 - Descartes the father of x, y and z Coordinate Geometry - a Historical perspective - **Garrod Musto**
A3 - Fluency with Reasoning - **Ruth Trundley, Helen Eversett**
A4 - The Geometry of Number systems - **András Hraskó**
A5 - Bring enrichment into your teaching - **Gerry Leversha**
A6 - Variation beyond the definitions - **Anne Watson**
*A9 - Finding the adult in adults learning mathematics an academic and political study - **David Kaye**
- The professional identities of mathematics and numeracy teachers in Further Education - **Diane Dalby**
- The 'crisis of statistics', and some implications for teaching - **Jeff Evans**
*A10 - Mathematics from East to West - **Andra Ghencea**
-Solving the Problem of Problem-Solving - **Andra Ghencea**
A11 - Encouraging Mathematical Conversations within an A Level Classroom - **Heidi Steele**
*A12 - Teaching in key stages 3 and 4 for a growth mind-set - **Jonathan Robinson**
- Mathematical problem solving in students with Autistic Spectrum Disorder (ASD) - **Max Goulding**
- Growth Mind-set for Low Prior Attainment: An Alternative - **Dan Draper**

1600 - 1730 Session A

A13 - The Missing or Unknown Polyhedra - **Adrian Pinel**

*A14 - The new Jericho: Why we must break down the walls of the Maths classroom. - **Graeme Austin**

- Enhancing Mathematical Thinking through Game Based Learning - **Pedro L. Montecillo Jr**

- Context based learning - **Simon von der Goltz**

A15 - Ratio from jelly babies to trigonometry - **Mundher Adhami, Lynda Maple, Sarah Seleznyov**

*A16 - Chartered College and evidence informed practice what does it mean for you - **Joe Treacy, Cat Scutt**

- Let's publish! A beginners guide to seeing your name in print - **Ems Lord**

- Being the teacher that's remembered for all the right reasons - inspiration in the classroom - **Sophie Carr**

A17 - A young person's introduction to integral calculus - **Peter Merrotsy**

A18 - Developing Early Number Sense - **Viv Lloyd,** NCETM

A19 - 3D Objects from circles - **George Connell**

A20 - Visualising Quadratic, Cubic, and Quartic Equation Solutions: An Introduction to Complex Numbers, Functions, and Mapping Diagrams - **Martin Flashman**

A21 - Japanese Lesson Study in Essex - **Janine Blinko**

A22 - Exploring Number Sense in Early Years Education - **Katherine Milner, Sarah White**

A23 - Bridging the divide between Primary and Secondary Mathematics - **Ian Hibbert**

A24 - Mastery at KS4 - **Emily Curtis-Harper**

*A25 - Medical graduate views on statistical learning needs for clinical practise: Promoting curriculum reform through development of a practitioner-focused evidence base - **Margaret MacDougall**

- Statistics concepts - getting the Big Picture - **Sidney Tyrrell**

A26 - The Transforming Power of Maths Games - **John Keyworth**

A27 - Making Construals of Mathematics - **Steve Russ, Meurig Beynon**

A28 - Gattegno (30th anniversary): Films - **Dave Hewitt, John Mason**

A29 - Active Maths - Using physical activity to raise attitudes and attainment in mathematics - **Jon Smedley**

A30 - Introduction to hypothesis testing using the binomial distribution - **Stella Dudzic**

A31 - Area of a circle: Do we have to teach area of a circle as *Area of a circle* = πr^2? - **Angela Wolsey**

A32 - Graphic Calculators for A-level - **Stephen Kean**

1740 - 1900 ATM AGM - Chancellors 2, Rootes Building

1800 - 2000 Evening Meal - Rootes Restaurant

1930 - 2030 Plenary Panel - Panorama, Rootes Building

Mathematics teachers working and learning through collaboration – What works?

Chair: Alison Clark-Wilson, Kate Gladstone-Smith, Paul McGarr, Helen Williams and Geoff Wake

Wednesday 4 April

0900 - 1000 Session B

B1 - ICT Strand 02: Finding and interpreting large data sets - **Mick Blaylock**

B2 - Making Numbers: the role of talk, mark making, drawing and symbolic recording in developing number sense - **Jenni Back, Sue Gifford, Rose Griffiths**

B3 - Intervention in the Mastery Context - **Andy Tynemouth**

B4 - Can our coinage system be improved? - **Peter Shiu**

B5 - Identities and Representations in Mathematics Teaching - **Lucy Rycroft-Smith**

B6 - A-level Mathematics contact group and CPD - **Richard Craster**

B7 - Let's talk about number - **Pamela Moffett**

B8 - Exercises in Mathematical Imagining From Practice to Theory to Practice - **Christof Weber**

*B9 - Further Mathematics Student Transition and Development - **Andrew Neate, Sofya Lyakhova**

- National Network for Excellence in Mathematics in Wales action research in 3-18 mathematics classroom in focus - **Sofya Lyakhova, Laura Morris, Rachel Wallis, Marie Joubert**

B12 - Low Stakes Testing in the Mathematics Classroom - **Colleen Young**

B13 - How to inspire a whole primary school in mathematics, using only triangles - **Declan Byrne**

B14 - Improving access to professional development - **Jo Sibley**

B15 - Geometric reasoning and problem solving - **Ruth Bull**

B16 - Research Led Teacher Training - **Joel Haddley**

B17 - Teaching multiplication with deep conceptual understanding - **Katie Crozier**

B18 - Challenging Topics in GCSE Mathematics - **Carol Knights,** NCETM

B19 - Terms of Enfearment - **Annette Margolis**

B20 - Dyscalculia and Singapore Maths - The Perfect Match? - **Judy Hornigold**

B21 - Variation: implications for task design in English primary classrooms - **Laurie Jacques**

B22 - Collaborative Maths and the power of a growth mindset - **Simon Ayres**

B24 - A (very) brief history of problem solving (1982 - 2017) - **Paul Metcalf**

B25 - Using Noticing to Promote Mathematical Thinking - **Karen Wilding**

B26 - What does research say about teaching mathematics at KS2 and 3? A review of reviews and meta-analyses - **Jeremy Hodgen, Colin Foster, Rachel Marks**

B27 - The interplay between expectation and interest in a mathematics class - **Paola Ramirez**

*B28 - Collaborative task design with student partners in a STEM foundation mathematics course: the Catalyst Project - **Dave Hewitt, Stephanie Thomas, Barbara Jaworski**

- Robot design and construction: Secondary students perceptions of a transdisciplinary STEM project - **Karen Skilling**

B29 - The NRICH Roadshow: is it just a bit of fun? - **Becky Warren**

B30 - Data modelling as a framework for teaching statistics - **Darren Macey**

B31 - A dice and numbers game - **Antal A. Jarai**

B32 - Group Flow When Engaged with Mathematics - **Sipho Morrison**

B33 - It's all about area! - **Chris Pritchard**

B34 - What can mathematical thinking look like post-16? - **Elizabeth Kimber**

1010 - 1110 Session C

C1 - ICT Strand 03: Desmos for teachers and students - **Stephen Britton**

C2 - Practical approaches for teaching mixed attainment mathematics classes at KS3 & 4 - **Helen Hindle**

C3 - Supporting children to be active and influential participants in mathematics lessons through effective use of pre-teaching and assigning competence - **Ruth Trundley, Helen Eversett**

C4 - The IMPaCT Taxonomy - Encourging Deep and Varied Questioning in the Mathematics Classroom - **Jo Denton**

C5 - Changes to mathematics education in England - what has happened and what can we learn from it? - **Charlie Stripp**

C6 - Using manipulatives to enhance understanding in secondary mathematics - **Michael Anderson**

C7 - From log tables to the iPad - **Ro Bairstow**

*C8 - Developing a taxonomy for rich assessments of mathematics - **Julian Gilbey, David Robson**

- Dynamo Assessment what it may tell us about primary school children's mathematics - **Ann Dowker, Karima Esmail**

*C9 - Problem Solving in the New A-Level: A Year of Experience - **Carole Tham**

- Exploring mathematics examples from a teacher's and students' perspectives - **Paola Ramirez**

C11 - How do we best test the subject knowledge of non-specialist KS2 mathematics teachers? - **Drew Quayle**

*C12 - Exploring Core Maths uptake, challenges and stakeholder experiences - **Matt Homer**

- Exploring Core Maths: From design intentions to implementation - **Geoff Wake**

C13 - Resources to support active learning at A-Level - **Stephen Lyon**

C14 - Inquiry based instruction in mathematics classrooms: The role of mindset for students with mathematics difficulties - **Jennifer Rice**

C15 - Enhancing students' problem-solving skills with Prompt Videos - **Andrew Stewart- Brown**

C17 - Some Calendar Issues - **Tony Robin**

C18 - Maths Hubs Work Groups – What are they and how do they work? - **John Westwell,** NCETM

C19 - Praying souls out of purgatory: ratio and proportion in the secondary classroom - **Peter Ransom**

C20 - The Singapore approach to textbook use and the variation theory - **Sue Lowndes**

C21 - Using Story as a Reasoning Tool in the teaching of Primary Calculation - **Dave Godfrey**

C22 - EYFS Mathematics - For New or Non-EYFS Practitioners - **Lacey Flook**

C23 - What aspects of professional development courses do mathematics teachers find effective? - **Debbie Barker**

*C24 - Connecting mathematics and French? Mais oui! - **Pauline Palmer, Sarah Lister**

- Using animated characters to convey numerical concepts - **Fiona Curtis**

*C25 - Purposeful Progress - A case study of NRICH's collaboration with Tower Hamlets primary schools - **Frances Watson**

- Developing Geometrical Reasoning - **Rachael Horsman**

C26 - Inspiring ideas for maths clubs - **Emily Fleming**

1010 - 1110 Session C

*C27 - Transitioning in the first year of an Engineering degree - **Stephanie Thomas, Clare Trott**

- From A level to HEI – **Edward Banks**

C28 - Reasons to Reason - **Alison Borthwick, Alan Cross**

*C29 - Plickers - How I use them in my teaching - **Rob Smith**

- Secondary Mathematics and Digital Technology - **Alison Parish**

C30 - Teacher A and Teacher B: Differences in teacher beliefs and practices for promoting cognitive engagement in mathematics - **Karen Skilling**

C31 - Visual Mathematics - Teaching Made Simple - **Nadeem Chaudhry**

C32 - Primary children's multiplicative thinking: resorting to instrumental learning - **Ray Huntley**

C33 - Exeter Mathematics Certificate: how education should be? - **Kerry Burnham**

C34 - Using graphical calculators in the A Level classroom - **Sam Hoggard**

1140 - 1240 MA Presidential Address - Panorama, Rootes Building

Tom Roper

Adventures in shape and space

Tom spent 17 years teaching mathematics in a variety of secondary schools, in two as Head of Department, before moving to the University of Leeds as a PGCE tutor. During his time at Leeds he was heavily involved in the Mechanics in Action Project, taught mathematics and mechanics to first year physicists, ran one of the Pathways in Mathematics Projects and wrote over half the videos for the on-line mathematics tutorial project, *math tutor*.

1240 - 1400 Lunch and Publishers' Exhibition

1400 - 1530 Session D

D1 - ICT Strand 04: Problem Solving using Web Resources - **Douglas Butler**

*D2 - Hands-on with the ScratchMaths curriculum: Blending computational and mathematical thinking in primary education - **Alison Clark-Wilson, Celia Hoyles, Piers Saunders, Richard Noss**

- Learning to Scratch: exploring mathematical knowledge through programming - **Piers Saunders**

D3 - Designing mathematical tasks with variation for primary classrooms - **Laurie Jacques**

*D4 - The Chinese Abacus: An exploration of mental calculation from 4-7 - **Kieran Mackle**

- Talk for Writing, in Maths - **Tracey Adams**

- Game-structured learning of mathematics - **Ferenc Arató**

D5 - Maths Marmalade - **Andrew Jeffrey**

D6 - Challenging inequity in mathematics education: Sharing teachers' pedagogical rationale with learners - **Pete Wright**

D7 - Problem Based Learning in Mathematics - **Shobha Bagai**

D8 - Reasoning First: A randomised controlled trial evaluation - **Terezinha Nunes**

*D9 - Third chances in Education - **David Martin**

- First Language Interference: a guide for teachers of mathematics - **Jenny Stacey**

- Thinking about the use of dialogue scenes when developing adult mathematics - **Graham Griffiths**

D10 - Developing excellence in mathematics – three new projects - **Simon Singh**

D11 - Breathe life into the teaching and learning of mathematics - Izak9 - **Franz Schlindwein**

D12 - How can we support teachers to develop their own practice through action research?- **Ruth Trundley, Stefanie Burke**

1400 - 1530 Session D

D13 - Expressing Generality with Number Grids - **John Mason**
D14 - Building mathematical fluency with board games - **Lucy Rycroft-Smith**
D15 - Underground Mathematics Supporting teachers and students to develop Mathematical Thinking – **Julian Gilbey**
D17 - Pop-Up Maths - **David Sharp**
D18 - Post-16 in Maths Hubs - **Andy Tharratt,** NCETM
D19 - What actually IS a rhombus, Miss? - **Corinne Angier**
D20 - How Many Ways Can You Solve a Quadratic Equation Visually? From the Greeks to 21st Century Technology - **Martin Flashman**
D21 - Mathematics in whose real world? - **Helen Farmery**
D22 - Maths Sticks - **Juliet Robertson**
D23 - Triumphant Tables - **Rachel Rayner, Charlie Harber**
D24 - Ideas for Using Creative Writing to Nurture Mathematics Learning - **William Lacefield**
D25 - History of Mathematics and the Curriculum - **Leo Rogers, Sue Pope**
D26 - The Shadow of Dimension Hypercubes and Beyond! - **Zack Bassman**
D27 - Three Ways with Displays - **Clarissa Grandi**
D28 - Supporting Transition from KS2 to KS3 - **Alison Hopper**
D29 - To the eighties and back to today - a tribute to the influence of Malcolm Swan - **Anne Haworth, Barbara Binns**
D30 - Inquiry Maths - **Andrew Blair**
D31 - Geometric proof, reasoning and artistic and cultural applications - **Mick Blaylock**
D32 - It's not all pizza fractions: maths that is literally good enough to eat! - **Alison Eves, Linda Wood**
D34 - Gattegno (30th anniversary): Cuisenaire rods (KS2 Gattegno Curriculum Chart) - **Ian Benson, Anne Crosby**

1530 - 1600 Break

1600 - 1730 Session E

E1 - ICT Strand 05: Spreadsheets in mathematics - **Mick Blaylock**
E3 - Exploring data with graphing technology - **Gerard Dummett**
E4 - The lighter side: a maths miscellany - **Michael Fox**
E5 - Fact and Fiction in the History of Mathematics - **David Acheson**
E6 - Teaching problem solving in the classroom - the primary perspective - **Helen Farmery, Anne Mulligan**
*E7 - Mathematics teachers working collaboratively What does it look like? - **Alison Clark- Wilson, Josh Lury, Ruth Trundley**
- Teachers learning from research - **Marie Joubert**
E8 - What does mathematical thinking look like in the primary classroom? - **Janine Blinko, Jeffrey Goodwin, Matt Lewis, Karen Skilling**
E10 - Concrete, Pictorial, Abstract and Language - The Use of Algebra Tiles - **Mark McCourt**
E11 - Gattegno (30th anniversary): Geoboards - **Geoff Faux, Charlotte Webb**
E12 - Computing divergent series - **Martyn Quigley**
E13 - To tell or not to tell? - **Heather Davis**

1600 - 1730 Session E

E14 - Investigative Tasks for Further Mathematics Pure - **Jonny Griffiths**
E15 - The mathematics in Islamic Art: a hands-on KS2 to 4 exploration - **Jennie Golding**
E16 - Classification from counting to data handling - **Mundher Adhami, Lynda Maple, Sarah Seleznyov**
E18 - Ensuring Continuity in Mathematics Across Years 5-8 - **Alison Hopper,** NCETM
E19 - How did Euclid and Archimedes manage without calculus? - **Bob Burn**
E20 - Making Sense of Complex Analysis with Mapping Diagrams: A New Visualisation Tool Enhanced by Technology (GeoGebra) - **Martin Flashman**
E21 - Lessons from history - **Peter Merrotsy**
E22 - Why exams do not tell you what students actually know - **Craig Barton**
E23 - There's a lot more to times tables than meets the eye - **Christine Lenghaus**
E24 - Variation for problem solving - **Simon Mazumder**
E25 - Extension materials for whole-class teaching for Years 4-8 - **Tony Gardiner**
E26 - Exploring the NRICH-STEM Learning collaboration - **Stephen Lyon, Alison Borthwick, Charlie Gilderdale**
E27 - Using Art in the Mathematics Classroom - **Clarissa Grandi**
E28 - Using Maths Toys to Drive Engagement - **Zoe Griffiths, Katie Steckles**
E29 -Talking mathematics: can signalling really improve mathematics participation post-16? A debate hosted by the **Royal Society Advisory Committee on Mathematics Education**
E30 - The problem with problem solving is learning how to teach it - **Rosa Archer, Ros Hyde**
E31 - Number, algebra and geometry across KS2 and KS3 - **Mike Ollerton**
E32 - Gattegno (30th anniversary): Cuisenaire rods (KS1 Gatteggno Product Chart) - **Jenny Cane, Suzanne Spencer**
*E34 - The role of the bar model in developing mathematical understanding - **Yvette Solomon, Sue Hough, Steve Gough**
- Comparing the bar model approaches from Singapore and the Netherlands - **Sue Hough, Steve Gough, Yvette Solomon**

1740 - 1900 The MA AGM - Chancellors 2, Rootes Building
1800 - 2000 Evening Meal - Rootes Restaurant

1930 - 2030 Plenary - Panorama, Rootes Building

Vicky Neale

Closing the Gap: The quest to understand prime numbers

Dr Neale is the Whitehead Lecturer at the Mathematical Institute, University of Oxford and a Supernumerary Fellow at Balliol College. Her job is to enthuse about mathematics to undergraduates, school students, and the wider public. Her first book, Closing the Gap: the quest to understand prime numbers, was published in October 2017. Vicky has experience of giving talks and leading workshops for a wide range of audiences, and has been a guest on several BBC Radio 4 programmes.

2100 Quiz - Panorama, Rootes Building

Thursday 5 April

0900 - 1000 Session F

F1 - ICT Strand 06: Autograph for KS3 and 4 - **Douglas Butler**
F3 - Progression towards open access environments in the teaching of statistics to non- specialists in medicine and allied health sciences and to promote statistical literacy within schools - **Margaret MacDougall**
F4 - Prioritising students' engagement through and in mathematical reasoning at A-level - **Nicola Bretscher**
F5 - Closing the attainment gap in mathematics - **Catherine Knowles**
*F6 - Drawing a mathematics lesson - **Ashley Compton**
- Perceived barriers to integrate children's literature in mathematics teaching: Perspectives of pre-school and primary teachers in England - **Natthapoj Vincent Trakulphadetkrai**
F7 - Dyscalculia and maths learning difficulties - **Peter Jarrett**
*F8 - Promoting Mathematics Literacy in Europe - **Jaime Carvalho e Silva**
- Mathematical Thinking, Curriculum Change, and Testing - **Nick Peatfield**
F9 - Deconstructing disability through/and promoting inclusive education in elementary mathematics classrooms the case of blind learners: Preliminary findings from a two-phase study - **Angeliki Stylianidou, Elena Nardi**
F11 - Exploring collaborative problem-solving in the classroom - **Ems Lord**
F12 - Investigating teachers' changes in practice with low-achieving students - **Rita Santos Guimaraes**
F13 - A Context for Generalising Number Sequences in the Primary Years - **John Mason**
F14 - Learning from work on the new level 3 Core Maths qualifications, developing tasks from interesting starting points - **Terry Dawson**
F16 - Getting it wrong is right - the use of collaborative working and problem-solving skills in mathematics as an extra-curricular activity in secondary schools - **Teresa Willmore, Elena Boguslavskaya**
F17 - Curriculum Planning for Problem Solving - **Lucy Kilgariff**
F18 - Communicating Mastery or Mastering the Communication? - **Steve McCormack,** NCETM
F19 - Concept-Based Mathematics - **Jennifer Chang Wathall**
F20 - Inequities in maternal and child healthcare associated with poor performance in junior secondary school mathematics in Nigeria - **Anne Meremikwu**
F21 - Researching experiences of mathematics learning through Arts Based Research - **Kelly Pickard-Smith**
F23 - Mathematical etudes: procedural fluency through rich tasks - **Colin Foster**
F24 - Mathematical Agency: explorations of children's problem solving in the Early Years - **Catherine Gripton, Deliah Pawluch**
F25 - The life of a STEP question: birth and transfiguration - **Stephen Siklos**
F26 - Theoretically informed design for professional learning - **Geoff Wake**
F27 - Making GCSE resit Mathematics work (and making students resitting GCSE Mathematics work harder) - **Fiona Allan**

0900 - 1000 Session F

F28 - Nattering about Numbers - Developing Classroom Discourse to Support Deeper Understanding - **Pinky Jain**
F29 - Linearity and the new AS/A Level Mathematics - **Will Hornby**
F30 - Technology and the mathematics curriculum: why you can't have your cake and eat it - **Martyn Quigley**
F31 - Connected A-Level PoS - **Dominic Oakes**
F32 - Developing effective primary mathematics subject leaders lessons from the Primary Science Quality Mark (PSQM) - **Clare Warren**
F33 - Mathematics outreach: fun or rigorous, systematic or fragmented? - **Sofya Lyakhova, Andrew Neate, Mary Capraro, Robert Capraro**
F34 - Using technology in the classroom to develop understanding, is it any good? - **Simon May**

1010 - 1110 Session G

G1 - ICT Strand 07: Geogebra for Beginners - **Tom Button**, MEI
*G2 - Mathematics for the reformed science A-levels - **Mary McAlinden, Andrew Noyes**
- Teaching Core Maths at Scale - **Ayesha Allen**
G3 - Mathematical Play: circle time, problem solving and discussion - **Kartar Uppal**
G4 - Many Mischievous Mathematical Misconceptions - **Craig Barton**
G5 - Topics taught by trainee secondary mathematics teachers - **Simon Woodage**
G6 - When is mathematics 'mental' in KS1 and how do you know? - **Anne White, Margaret Young, Annalee Toon**
G7 - Preparing students for Mathematical Olympiads - **Jeremy King**
*G8 - Challenging the fear: a framework for addressing anxiety in adults learning mathematics education - **Karen Wicks**
- Bridging the gap? Reflections on helping students adjust to university mathematics - **Pamela Docherty**
G9 - Lesson study as a means of transforming school practice - **Rosa Archer, Sylwia Glazewska**
G10 - The pathway to understanding functions - **Anne Watson**
G11 - Mastery learning in mathematics: boon or boondoggle - **Martyn Quigley**
*G12 - How has the meaning of excellent teaching in Chinese classrooms evolved? A longitudinal analysis of six exemplary mathematics lessons in China in two decades - **Dongchen Zhao**
- What role do learning resources play in students' learning of mathematics? Findings from Shanghai schools - **Yi Wang**
G13 - GCSE Resit - Approaches to integrating more than one area of mathematics into learning tasks - **Katharine Davies**
G14 - Ideas that transformed my teaching - **Jo Morgan**
G15 - Working with STEM Ambassadors to Link Mathematics to the Workplace - **Sarah Myers, Leslie Whyte-Venables**
G16 - The future of the UK Mathematics Trust - **Steven O'Hagan**
G17 - What do we know about girls choosing and doing mathematics? - **Cathy Smith**
G18 - The essentials of subject knowledge enhancement – How Maths Hubs are supporting teachers and teaching assistants - **Ione Crossley,** NCETM
G19 - Writing up your research presentation for the BCME9 peer-reviewed proceedings: a practical workshop – **Jeremy Hodgen**

1010 - 1110 Session G

G20 - Using technology to understand graphs - **Kelly Klus**
G21 - Teaching A Level Mechanics for the first time - **Howard Fay**
G22 - New 9-1 GCSE Statistics - **Lucy Kilgariff**
G23 - Cambridge Mathematics Espressos - filtered mathematics education research - **Lucy Rycroft-Smith**
G24 - Using large whiteboards to promote a dialogic approach to teaching and learning post 16 - **Clare Hill**
G26 - Lifelong Mathematics Learning - a discussion - **Jackie Ashton, Diane Dalby, Jeff Evans, Graham Griffiths, David Kaye, Beth Kelly, Jenny Stacey**
G27 - Starting to do your own research: guidance for teachers from teachers - **Marie Joubert, Sofya Lyakhova**
G29 - Linearity and the new AS/A Level Further Mathematics - **Will Hornby**
G30 - What would Galileo do? - **Vinay Kathotia**
G31 - Proof and Pudding - **Richard Earl**
G32 - Modelling - **James Lewis-Coll**
G33 - A Phenomenographic Approach to History of Mathematics - **Amir Asghari**
G34 - Practical ideas to engage! - **Greg Thomas, Paul Treversh**

1110 - 1140 Break

1140 - 1240 Plenary - Panorama, Rootes Building

Ruth Merttens

Blocking – Profits and Perils of a Non-spiral Curriculum. What we can learn from experience, research and scholarship. Practical ways to achieve mastery.

Professor Merttens is Education Director of Hamilton Trust, an educational charity producing adaptable resources for primary teachers. She travels the country giving practical, hands-on in-service training on creative teaching in mathematics and English, and has particular expertise in Early Years education.

1240 - 1400 - Lunch and Publishers' Exhibition

1400 - 1530 Session H

H1 - ICT Strand 08: Geogebra for Experienced Users - **Tom Button**, MEI
H2 - Different Problem - Same Answer - **John Burke**
H3 - Assessing Mathematical Thinking: Talking to children - **Ruth Trundley, Stefanie Burke**
*H4 - A Blended approach to developing teacher Subject Knowledge An invaluable way to widen Mathematics teacher recruitment, but full of interesting challenges - **Jennifer Shearman**
- The pedagogy of an asynchronous online course: tutor presence for supporting students' e- learning **Cosette Crisan**
- Learning to teach through webinars: what has to change, and what is the impact of that? - **Jennie Golding, Nicola Bretscher**
*H5 - Promoting inclusion for children with autism through pattern activities - **Helen Thouless**
- Elements of pattern - **Sue Gifford, Helen Thouless**

1400 - 1530 Session H

*H7 - Experiences of a pair of mathematicians teaching in a primary school - **Richard Thomas**
- A Study into Links Between Performance and Mathematical Resilience in Year 1 Children - **Katie Baker**
- Catch Up Numeracy: an Intervention for Children Struggling with Mathematics - **Ann Dowker, Graham Sigley**
*H8 - Teaching problem solving in the new A-level - **Nikki Gupta**
- Common mistakes students make at A-level - **Nikki Gupta**
H10 - The Cambridge Maths Framework - **Rachael Horsman, Darren Macey, Tabitha Gould**
H11 - Using NRICH tasks to develop resilient problem solvers - **Alison Kiddle, Charlie Gilderdale**
H13 - Puzzling Problems for the Classroom - **Tom Cowan, Barbara Allen, Charlotte Webb, Angela McConnell , Jeffrey Goodwin**
H14 - Problem Solving in GCSE, Core Maths and A level - **Mick Blaylock, David Burghes**
*H15 - GCSE resit - the good news - **Peter Whitehead**
- GCSE resit - the role of parents - **Peter Whitehead**
H16 - Including disabled learners in school mathematics - **Lulu Healy, Irene Biza, Érika Silos de Castro, Elena Nardi**
H17 - Lyness sequences - **Stan Dolan, Jonny Griffiths**
H18 - Teaching through variation: the key to mastery of mathematics - **Debbie Morgan,** NCETM
H19 - Literacy for Life, developing the literacy skills that pupils need to be successful in mathematics - **David Dowling, Catharine Driver**, National Literacy Trust
H20 - Making Sense of Integration Visually: mapping Diagrams for Calculus - **Martin Flashman**
*H21 - Stickability - getting students to remember - **Hinal Bhudia**
- Whispering away maths anxiety - **Henri Plag**
- Supporting low attaining students through secondary school mathematics - **Graham Walton**
*H22 - Dynamic digital technologies for dynamic mathematics: implications for teachers' knowledge and practice - **Alison Clark-Wilson, Celia Hoyles**
- Dynamic digital technologies for dynamic mathematics: Hands-on with the Cornerstone Maths activities - **Kate Gladstone-Smith, Phil MacDivitt**
H23 - Building Mathematical Resilience - **Clare Lee, Sue Johnston-Wilder**
H24 - Gattegno (30th anniversary): the Tens Chart - **Tom Francome, Luke Richards**
H25 - Lazy teaching with active learners - **John Suffolk**
H26 - Sims for Maths - **Sami Salah**
H27 - What's the same? Areas of agreement in mathematics education research and practice - **Helen Drury**
H28 - The Pedagogy of NRICH - **Liz Woodham or Frances Watson or Alison Borthwick**
H30 - The essence of mathematics - through elementary problems - **Tony Gardiner**
H31 - Archimedes' best ideas - **Paul Stephenson**
H32 - Using Cuisenaire from early years to adult - **Helen Williams, Simon Gregg, Mike Ollerton**
*H34 - Addressing low attainment in the middle years: A multiplicative reasoning intervention study - **Hamsa Venkat**
- Addressing low attainment in the middle years: The design and implementation of a focused intervention - **Mike Askew**

1530 - 1600 Break

1600 - 1730 OUP Sponsored Plenary - Panorama, Rootes Building

Berinderjeet Kaur

How the mastery approach works in Singapore secondary schools – what can the UK mathematics teachers adopt or adapt?

Berinderjeet Kaur is Professor of Mathematics Education at the National Institute of Education in Singapore, the founding chairperson of the Singaporean Mathematics Teachers' Conference series, and founding editor of the Association of Mathematics Educators Yearbook series.

1740 - 1900 NAMA AGM - Chancellors 2, Rootes Building

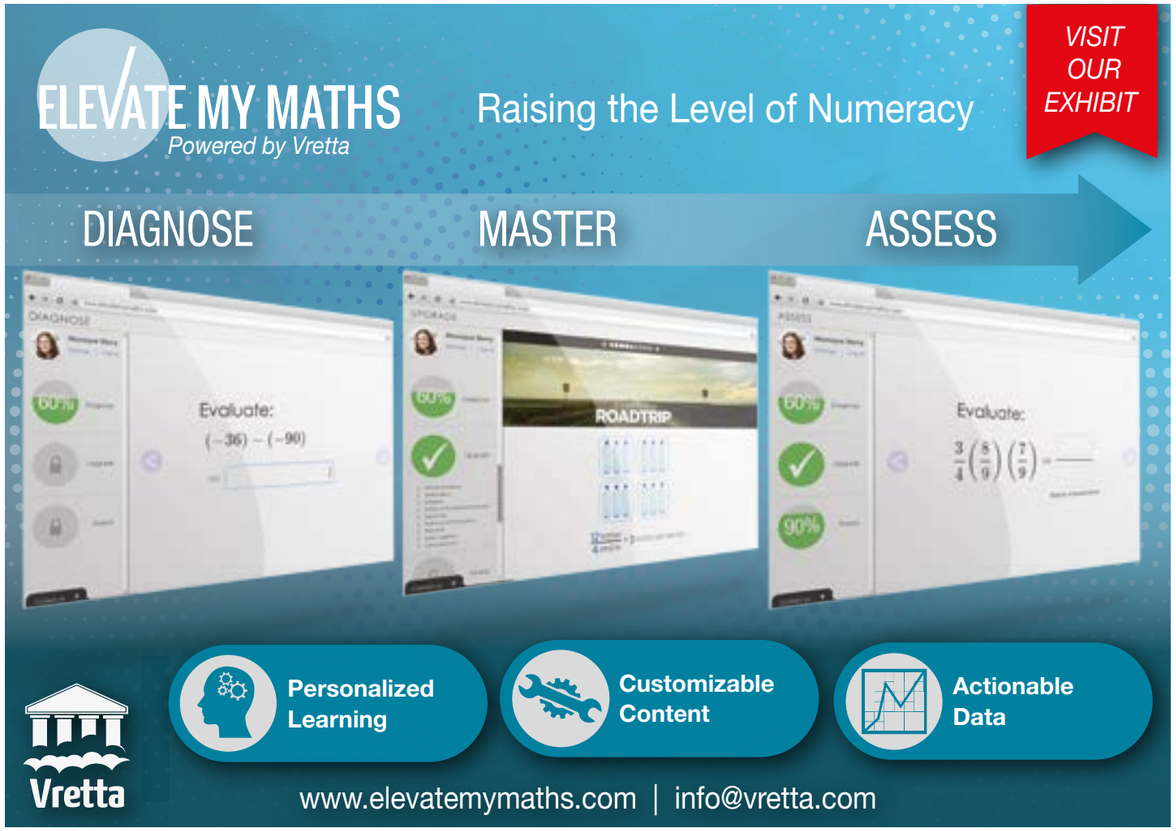
1800 - 2000 Evening Meal (NOT Conference Dinner) - **Rootes Restaurant**

1930 Conference Dinner - Panorama, Rootes Building

Hannah Fry

After Dinner Speaker

Dr Fry is a Senior Lecturer in The Mathematics of Cities at UCL. Her work revolves around studying the patterns in human behaviour, particularly in an urban setting: shopping, riots, transport and terrorism.



Friday 7 April

0900 - 1000 Session I

I1 - ICT Strand 09: Autograph for KS5 - **Douglas Butler**

I3 - The Answers Aren't Important - **Ed Southall**

I5 - Learning algebra in a digital age - **Chris Sangwin**

*I6 - What do prospective mathematics teachers notice in a lesson on patterns? **Hatice Akkoç Hande Gülbagcı-Dede, Sibel Yesildere-Imre, Zuhal Yılmaz, Betul Yazıcı**

- Development of Noticing Skills of Prospective Mathematics Teachers: A Focus on Students' Difficulties with the Function Concept - **Hande Gulbagci-Dede, Hatice Akkoç**

I7 - Revealing Mathematics - **David Bedford, Ben Sparks**

*I8 - Why do students construct a joint solution to non-routine unstructured problem that is no better than their original individual solutions? - **Sheila Evans**

- The Thinking Project - Creating Positive Thinking in Post-16 Mathematics - **Helen Johnson**

I9 - The connectedness of mathematics - **Vinay Kathotia**

*I10 - Transforming aspirations of mathematics teachers into strategies in context - **Irene Biza with Victor Giraldo, Lina Kayali, Jack Keeler, Bruna Mustafa, Elena Nardi, Rebecca Potiphar, Angeliki Stylianidou, Athina Thoma, George Thoma**

- Teachers' use of resources for mathematics teaching - the case of teaching trigonometry - **Lina Kayali, Irene Biza**

*I11 - Talk me through it: Promoting dialogue in mathematics teaching through peer-facilitated professional development - **Elisa Calcagni**

- Transition from Instrumental Genesis to Anthropological Moments of Didactics in the Teaching and Learning of Mathematics in Basic Schools - **Clement Ali, Ernest Kofi Davis, Douglas Darko Agyei**

I13 - Recruiting and training Mathematics teachers in challenging times - **Julia Brown, Barbara Rodgers**

*I14 - The challenges and delights of an Honours course on problem solving and enquiry in primary school mathematics - **Susan McLarty**

- Pre-service teachers' perceptions of compressed knowledge theory - **Amanda Wilkinson**

I15 - Talk for mathematics - **Sarah Morgan**

I16 - The new contender: Shanghai Maths in Key Stages 1 and 2 - **Amanda Simpson**

I17 - Evaluating Qualification Reform - **Alison Tonkin**

I18 - Rising to the reasoning and problem solving challenges of the new curriculum and GCSE - **Rob Tait,** NCETM

I19 - Teaching Calculus with Graphing Technology - CASIO CG20/50 - **Akpan Okono**

I20 - Learning fractions through visual representations: a Ph.D. research with low-achieving secondary students - **Leonardo Barichello**

I21 - Discrete mathematics with cows - **Kitty Meeks**

I23 - Students' Mathematical Digital Competencies - **Eirini Geraniou, Uffe Thomas Jankvist**

I24 - Thinking Beyond Numbers - **Perpetua Ratcliffe**

I26 - Collaborating between primary, secondary and higher education: The case of a project on fractions - **Clare Hill, Christian Bokhove**

0900 - 1000 Session I

I27 - Mathematics teachers' decisions - **Andres Pinzon and Pedro Gomez**
I29 - Recalling Multiplication Facts and Developing Mathematical Thinking - **Charlotte Wilkinson**
I30 - Helping children master fractions in Primary mathematics - practical strategies for identifying key misconceptions and for challenging these - **Marc North**
I31 - Worksheet-Making Extravaganza - **Naveen Rizvi**
I32 - Mathematics in Further Education Colleges: the effects of policy and practice on students' mathematics trajectories - **Diane Dalby, Andy Noyes**
I33 - Environments for teachers' own development - **Anna Kristjansdottir**
*I34 - Talk in mathematics: exploring students mathematical language use in lessons - **Jenni Ingram, Nick Andrews, Andrea Pitt**
- What Are You Waiting For? - **Michelle Falcinelli**

1010 - 1110 Session J

J1 -ICT Strand 10: Tablets in the Classroom- **Douglas Butler** (Bring and share session)
J2 - Further Pure with Technology - **Tom Button**
*J3 - Lesson study, professional development courses, and the development of mathematical and pedagogical understanding - **Sian Morgan, David Swanson**
- Lesson Study in Initial Teacher Education: can the experience mediate student-teachers' pedagogic beliefs and practices? - **Rosa Archer**
J4 - Conwayana - **Jim Simons**
J5 - Does a 'Building Houses with Side Views' tool improve Mental Rotation Skills in year 7 pupils? - **Christian Bokhove, Edward Redhead**
J6 - How can you support your students prepare for university entrance exams? - **Claire Metcalfe**
J7 - STIMULUS - enrichment and opening doors - **Jacqui Watkins**
J8 - Redressing the Balance: assessing primary mathematics through observation and journalling - **Gawain Little, Clare Whyles, Jo Horn, Steph Gillroy-Lowe**
*J9 - Learning mathematics in the workplace: what motivates adults? - **Beth Kelly**
- Family mathematics - supporting adults' and children's learning - **Jackie Ashton**
J10 - Which is bigger out of the giants ? - **Zoltan Retkes**
J11 - Assessing Student Teachers' Reasoning with Fractions - **Pablo Mayorga**
*J12 - Engaging Students using Audio Feedback - **Florian Bouyer**
- Measuring learning from two-stage collaborative exams in mathematics - **George Kinnear**
J13 - Teaching Linear Programming using Lego: Making a Real Difference with Operational Research - **Sophie Parker**
J14 - The Importance of the 'Who' and 'What' of Deciphering Word Problems in KS1 and KS2 - **Jean Knapp**
J15 - 50 Mathematical Things To Do Outside Before You Are $6\frac{3}{4}$ - **Juliet Robertson**
J16 - Fluency, problem solving and reasoning for the 2014 curriculum: how are they being embedded, and what difference does that make to students? - **Jennie Golding, Grace Grima,** the Pearson Research and Efficacy team
J17 - Supporting new and non-specialist mathematics teachers - **Jemma Sherwood**

1010 - 1110 Session J

J18 - Leading Maths PD – What are the skills and knowledge required? - **John Westwell,** NCETM
*J19 - Bar Modeling and Autism - Sufficient or Necessary in Problem Solving? - **Shaun Thompson**
- Maths Anxiety in Primary Classrooms - **Heidi Kirkland**
J20 - Lessons to learn from how students performed in the 2017 GCSE (9-1) Mathematics assessment - **Neil Ogden**
J21 - Core Maths the story thus far and planning for 2018 implementation - **Mick Blaylock, Paul Glaister and others**
J22 - MathSOL: Teaching Mathematics to Speakers of Other Languages - **Paul Landers**
J23 - Mentoring teacher trainees of mathematics for ESL learners in post-compulsory education reflections and challenges - **Kevin Norley**
J24 - A beginner's guide to Grid Algebra and GeoGebra - **Alison Parish**
J25 - Curriculum backwards and forwards shifting the focus from endpoints to journeys in mathematics curriculum development - **Ellen Jameson**
J26 - Multiple representations in teaching and learning mathematics challenges and opportunities - **Marie Joubert**
*J27 - Using ESOL skills to improve mathematics teaching - **Peter Whitehead**
- Functional skills - deconstructing the context and problem-solving - **Peter Whitehead**
J28 - Mathemathinking - **Mary Fiore**
J29 - It's a Kind of Magic - **David Crawford**
J30 - Inspirational off-the-shelf Masterclasses: just add enthusiasm! - **Samantha Durbin, Alison Eves**
J31 - Developing Confidence in Problem Solving - **Cheryl Hall**
J32 - Investigating Mathematical Attainment and Progress - **Jeremy Hodgen, Colin Foster**
J34 - How do online professional learning courses compare with face-to-face? Reflection from a national provider - **Sharon Tripconey, Sue de Pomerai**

1110 - 1140 Break

1140 - 1240 Closing Plenary - Butterworth Hall, Warwick Arts Centre

Paul Ernest

Mistakes Make Mathematics: Errors are Essential in Education

Professor Ernest started his career as a mathematics teacher in London in the 1970s and then moved into teacher education and research in Cambridge, Bedford and Kingston, Jamaica and finally in Exeter. He is currently emeritus professor at Exeter University, UK where he established and ran the doctoral programme in mathematics education. He has recently held visiting professorships at Trondheim, Oslo, Liverpool and Brunel University, London. His research investigates problems about the nature of mathematics and how it relates to teaching, learning and society. Inevitably this raises questions about the relationship between mathematics and epistemology, ontology, aesthetics and ethics, including social justice, which he continues to address.

In Memory of

Malcolm Swan

1300 - 1500

Malcolm Swan, a much loved and highly influential figure in mathematics pedagogy research and development, sadly passed away in 2017. Malcolm's unique contribution to mathematics education will be celebrated immediately after BCME on Friday 6 April. You must register in advance to attend.

Please don't forget to fill in your evaluation form and hand it back to any member of Conference staff, or at the Conference help desk.

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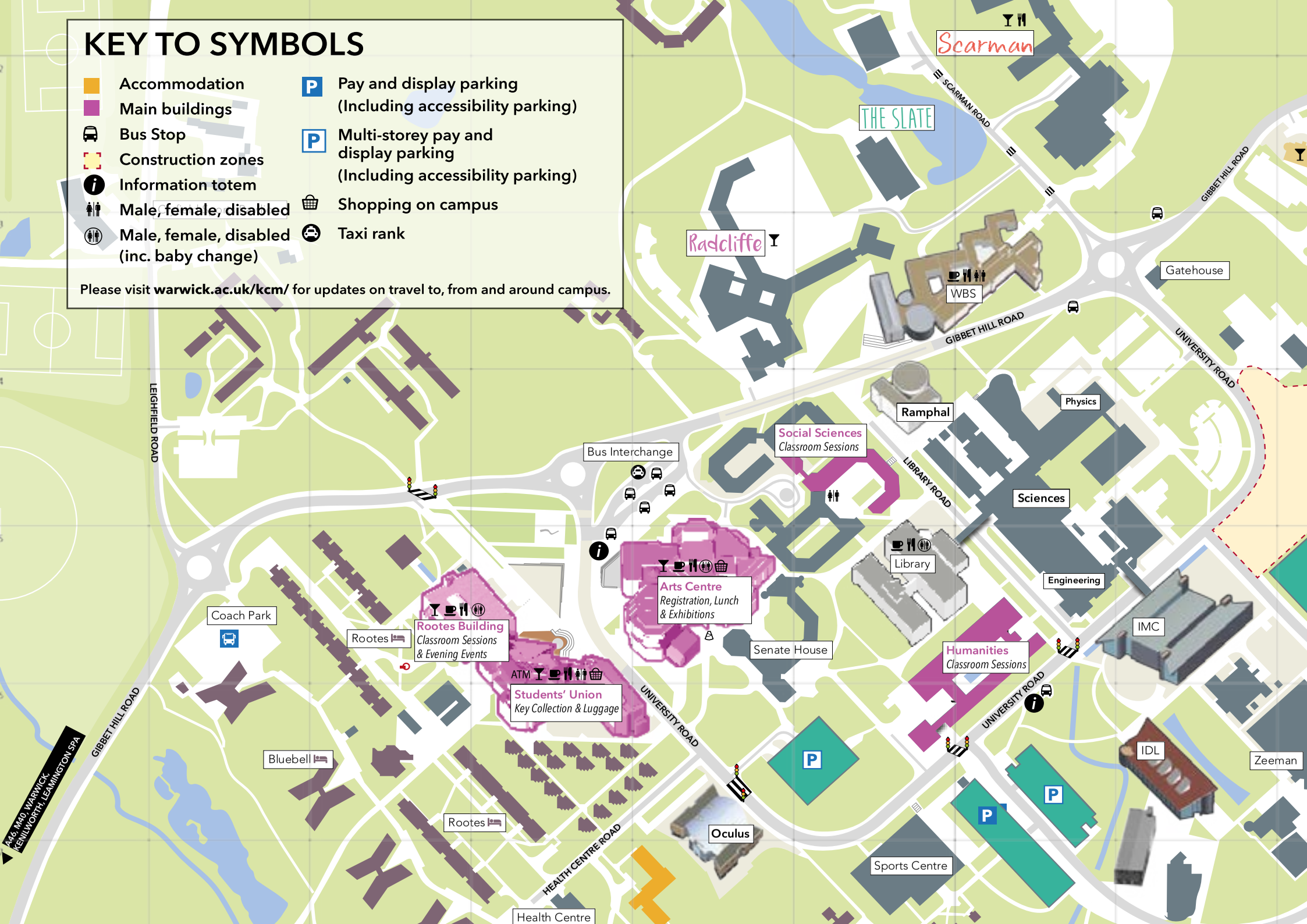
KEY TO SYMBOLS
Accommodation
Main buildings
Bus Stop
Construction zones
Information totem
Male, female, disabled
Male, female, disabled (inc. baby change)
Pay and display parking (Including accessibility parking)
Multi-storey pay and display parking (Including accessibility parking)
Shopping on campus
Taxi rank
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Classroom Sessions
LIBRARY ROAD
Sciences
Bus Interchange
Library
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Registration, Lunch & Exhibitions
Engineering
IMC
Coach Park
Rootes
Rootes Building
Classroom Sessions & Evening Events
Senate House
Humanities
Classroom Sessions
ATM
Students' Union
Key Collection & Luggage
UNIVERSITY ROAD
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