The Mathematical Association of South Australia Inc

ANNUAL CONFERENCE 2021

CONCORDIA COLLEGE

24 Winchester Street Highgate

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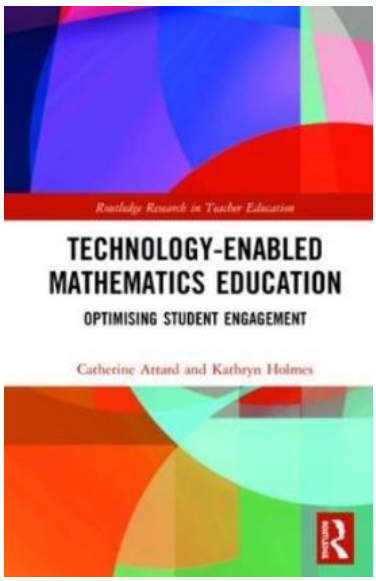
TEXAS INSTRUMENTS

PROGRAM	
DAY 1	**THURSDAY 15TH JULY**
7.00 am	**"Breakfast" Pat-A-Cake** – 50 Duthy Street, Malvern ($10.00 deposit secures your booking when registering for the Conference)
8.30 am – 8.45 am	**Registration** – tea and coffee available
8.45 am – 9.00 am	**Welcome and Housekeeping** –
9.00 am – 9.10 am	**Conference Sponsors** – **Mathspace and Credit Union SA**
9.10 am – 10.00 am	**The Carol Moule Keynote Address** – **Professor Catherine Attard** / Associate Professor, Mathematics Education Deputy Director, Centre for Educational Research President, Mathematics Education Research Group of Australasia (MERGA) / Western Sydney University
10.00 am – 10.30 am	**Morning Tea** / **visit Trade Displays** /
10.30 am – 11.30 am	**Workshop 1**
11.30 am – 12.30 pm	**Workshop 2**
12.30 pm – 1.30 pm	**Lunch** / **visit Trade Displays** /
1.30 pm – 2.30 pm	**Workshop 3**
2.30 pm – 4.00 pm	**"Happy Hour"** - nibbles & refreshments provided
4.30 pm onwards (kitchen open-5.00pm)	**"Dinner" Earl of Leicester Hotel** – 85 Leicester Street, Parkside ($10.00 deposit secures your booking when registering for the Conference)
DAY 2	**FRIDAY 16TH JULY**
7.00 am	**"Breakfast" Pat-A-Cake** – 50 Duthy Street, Malvern ($10.00 deposit secures your booking when registering for the Conference)
8.30 am – 8.45 am	**Registration** – tea and coffee available
8.45 am – 9.00 am	**Welcome and Housekeeping** –
9.00 am – 9.10 am	**Conference Sponsors** – **Education Perfect**
9.10 am – 10.00 am	**Keynote 2** - **Helen Booth** / MASA, Professional Officer and **Cassandra Lowry** / St Francis of Assisi Primary School, Numeracy Leader
10.00 am – 10.30 am	**Morning tea** / **visit Trade Displays** /
10.30 am – 11.30 pm	**Workshop 4**
11.30 pm – 12.30 pm	**Workshop 5**
12.30 pm – 1.30 pm	**Lunch** / **visit Trade Displays** /
1.30 pm – 2.30 pm	**Workshop 6**

The Carol Moule Keynote Address - Thursday 15th July – Day 1 – via Zoom

Catherine Attard / Associate Professor, Mathematics Education Deputy Director, Centre for Educational Research President, Mathematics Education Research Group of Australasia (MERGA) / Western Sydney University



Bio:

Catherine is an Associate Professor in primary mathematics education and Deputy Director of Research within the School of Education at Western Sydney University. She is a multiple award-winning educator who has transformed teaching and learning in primary mathematics at Western Sydney University for over 12 years. Catherine's research is focused on student engagement with mathematics and issues surrounding the pedagogical practices that influence students' engagement. Catherine is also actively researching contemporary teaching practices through the use of digital technologies, and the use of financial literacy education as a tool to engage children with mathematics. She regularly presents workshops and keynotes nationally and internationally and is the current President of the Mathematics Education Research Group of Australasia (MERGA) a past president of the Mathematical Association of New South Wales (MANSW), and past editor of the professional journal, Australian Primary Mathematics Classroom. Catherine is also the author of the leading mathematics education blog, engagingmaths.com, as well as the author of several popular mathematics teacher resource books and more recently, co-author of the book *Technology-enabled Mathematics Education: Optimising Student Engagement*.

Abstract: All Years

Mathematics, Engagement and Technology: Getting it Right

Engagement with mathematics continues to be a concern across school systems in Australia. Students who disengage are likely to discontinue the study of mathematics beyond the compulsory years, limiting their options for further study. This is a concern at a local and national level, given the exponential growth of STEM-related industries. In this keynote I will explore the construct of engagement and a range of contemporary and engaging practices for mathematics classrooms. The Technology Integration Pyramid (Mathematics) will be presented, along with ways to effectively integrate digital technologies in mathematics education to promote teacher and student engagement.

Keynote 2 – **Friday 16th April – Day 2**

Helen Booth / MASA, Professional Officer

Bio:

Helen is a highly experienced generalist teacher, instructional coach, and leader with a deep passion for the learning and teaching of Mathematics. Before she worked at MASA, she worked for four years as a Schools Outreach Officer as part of the CHOOSE**MATHS** project for the Australian Mathematical Sciences Institute (AMSI.) Working across 3 States, Western Australia, South Australia, and Victoria, in 20 plus schools, she worked with well over 300 teachers, including pre-service, early career, accomplished and highly experienced teachers. She has run professional learning sessions for small teams, whole schools and network groups as well as presented as national and state conferences. In her work at MASA, she continues to support teachers in remote and rural schools through the Remote and Rural Schools Mathematics Program (RRSMP) supported by the Minister for Education, South Australia, as well as delivering professional learning to Adelaide-based schools. Helen is extremely creative in inventing hands on activities to demonstrate mathematical concepts.

Cassandra Lowry / St Francis of Assisi Primary School Tarneit, Numeracy Enhancement Leader

Bio:

Cassandra Lowry is an experienced mathematics educator who is passionate about maths and learning. Her appreciation of maths was apparent throughout her schooling and led her to complete a degree in mathematics. Despite her enthusiasm, the often-negative feedback she received about her chosen field encouraged her to return to university to study teaching (M.Ed. University of Melbourne) and work directly in schools to hopefully change perceptions around mathematics. This journey led her to teach in classrooms across Foundation to Year 6 and eventually landed her in the role of an Outreach Officer for the Australian Mathematical Sciences Institute's (AMSI) highly successful CHOOSEMATHS project. Returning to a school-based role in 2021, Cassandra currently works as a Numeracy Enhancement Leader for St Francis Primary School in Tarneit, Victoria. This role provides her with the opportunity work directly with staff, students and parents to explore problems, plan and analyse data and share her love of all things maths and learning with a whole new generation of educators and students.

Abstract: All Years

Don't panic - finding ways to overcome maths anxiety in the classroom.

Many students and adults suffer from maths anxiety, feelings of dread, concern and nervousness when faced with any mathematical. For some, it is debilitating, resulting in active avoidance of anything remotely related to maths, including occupations perceived as requiring any level of mathematical competency. Students as young as Year 1 can begin to develop maths anxiety and females are more likely to suffer from it than males. As mathematical competency gains even greater importance in the workplace, providing strategies for teachers to help students overcome and/or limit the impact of maths anxiety becomes increasingly important. As well as unpacking maths anxiety, this keynote highlights strategies proven to reduce the impact on students' learning and outcomes.

DAY 1	Thursday 15th July
8.30 am – 8.50 am	**Registration** – tea and coffee available
8.45 am – 9.00 am	**Welcome and Housekeeping** –
9.00 am – 9.10 am	**Conference Sponsors**
9.10 am – 10.00 am	**The Carol Moule Keynote Address 1** – Professor Catherine Attard – via zoom
10.00 am – 10.30 am	**Morning Tea** / **visit Trade Displays**

10:30 am – 11.30 pm **Workshop 1** –

Session	Presenter and Title	Yr levels	Room
1.1	**ANDREWS, Justina** / Grant High School Introduction to Desmos Activities	7 - 12	82
1.2	**CHALMERS, Jennifer** / The Royal Institution of Australia – **WORKSHOP UNAVAILABLE** Combining S.T.E and M through the use of design challenges	7 - 10	
1.3	**KUEH, Michelle** / Mangahigh - **WORKSHOP UNAVAILABLE** Mastering Growth Mindset in Maths	R - 10	
1.4	**LOWRY, Casandra** / St Francis of Assisi Primary School Cuisenaire Rods – More than just colourful blocks	F - 6	83
1.5	**O'KANE, Daniel** / Mathspace Mathspace – blurring the line between assessment and learning	3 - 12	84
1.6	**WHEAL, Michael** / MASA Finding Talent Quest Material in the annual program session one	9 - 12	M24
1.7	**WOODARD-KNIGHT, Deb and FROST, Valerie** / Walford Anglican School for Girls & Blackfriars Priory School Teacher Year 12 Specialist Maths	12	72
1.8	**KISSANE, Barry** / Murdoch University, WA Mathematics, health and risks	10 - 12	85
1.9	**LANNEN, Brian** / Murray Mathematics Curriculum Services – **via ZOOM** Efficient and Effective use of TI-84PlusCE in the General Mathematics Exam	11 - 12	74
1.10	**LOVEJOY, Jakeb** / Esri Australia – **via ZOOM** Using ArcGIS online for Measurement and Geometry	7 - 9	M23
1.11	**MAENPAA, Marjut** / Pembroke School Using FX Draw	All	86
1.12	**QUANE, Dr Kate** / University of South Australia Understanding children's attitudes towards mathematics	R - 10	87

11.30 am – 12.30 pm **Workshop 2** –

Session	Presenter and title	Yr levels	Room
2.1	**ATTARD, Professor Catherine** / Western Sydney University – **via ZOOM** Mathematical Games to Promote the Proficiencies		71
2.2	**BLENCOWE, Jacinta** / Bendigo South East College Handling hands on – using hands on materials in the classroom	3 - 8	72
2.3	**BUTLER, David** / University of Adelaide Exploring deltahedra	All	73
2.4	**FELSTEAD, Brad** / The Maths Show Maths Magic and Mind Reading		74
2.5	**FOX, Peter** / Texas Instruments Programmed Success		82
2.6	**HARRADINE, Anthony** / Potts Baker Institute, Prince Alfred College Problem Solving your way to "power"	All	83
2.7	**BOOTH, Helen** / MASA Fractionally too late by Year 5	Primary	84
2.8	**NAUM, Constantin** / Woodville High School A proposed folio task for Statistics and Calculus	11 - 12	85
2.9	**CAPURSO, Sam & MAZZAROLO, Lauren** / Blackfriars Priory School & Seymour College	6 - 10	86

	Maths 'fillers'		
2.10	**DEMPSEY, David / Analytic Business Partners** The Secret to Partnering with CSIRO's STEM Professionals	F - 12	**87**

12.30 pm – 1.30 pm – **Lunch** – **visit Trade Displays** /

1.30 pm – 2.30 pm **Workshop 3** –

Session	Presenter and title	Yr levels	Room
3.1	**ATTARD, Professor Catherine** / Western Sydney University – **via ZOOM** Becoming Mathematicians: Conducting Mathematical Investigations	3 - 8	**71**
3.2	**CHALMERS, Jennifer** / The Royal Institution of Australia **WORKSHOP UNAVAILABLE** Using SCINEMA films to put Maths in context	R - 10	
3.3	**WEST, Dr John** / AAMT What's new in Math 300?	2 - 12	**82**
3.4	**KORBOSKY, Richard** / Dapma Pty Ltd Maths Card Games 'which make you think'	F - 9	**86**
3.5	**LUPTON, Alastair** / Adelaide Botanic High School Dogball – a study of bounce	10 - 12	**74**
3.6	**WHEAL, Michael** / MASA Finding Talent Quest Material in the annual program session two	9 - 12	**83**
3.7	**PROCHAZKA, Helen** / Zenolith Why I love maths and many students don't!	All	**84**
3.8	**KISSANE, Barry** / Murdoch University, WA Calculus concepts and calculators	11 - 12	**85**
3.9	**LANNEN, Brian** / Murray Mathematics Curriculum Services – **via ZOOM** Know Your Limits – a Calculus Introduction	11 - 12	**74**
3.10	**LOVEJOY, Jakeb** / Esri Australia – **via ZOOM** Using Survey 123 for Statistical analysis	7 - 9	**M23**
3.11	**FROST, Valerie** / Blackfriars Priory School Extension Maths for Primary Grades	Primary	**72**

"Happy Hour & Raffle Prize Draw"– nibbles & refreshments provided

DAY 2	Friday 16th July
8.30 am – 8.50 am	**Registration** – tea and coffee available
8.50 am – 9.00 am	**Welcome and Housekeeping** –
9.00 am – 9.10 am	**Conference Sponsors**
9:10 am – 10:00 am	**Keynote Address 2** – Helen Booth & Cassandra Lowry
10.00 am – 10.30 am	**Morning Tea** / **visit Trade Displays** /

10.30 am – 11.30 pm **Workshop 4** –

Session	Presenter and title	Yr levels	Room
4.1	**BLENCOWE, Jacinta** / Bendigo South East College Connecting Maths to Real Life – Engaging Secondary Students	7 - 10	**72**
4.2	**FOX, Peter** / Texas Instruments Mathemagicians Exposed		**82**
4.3	**LUPTON, Alastair** / Adelaide Botanic High School Dogball – in the dog house	10 - 12	**74**
4.4	**O'SHAUGHNESSY, Glenn** / Education Perfect Education Perfect on-line assessments: data, feedback, personalisation and growth	5 - 12	**73**
4.5	**KORBOSKY, Richard & John LAWTON**/ Objective Learning Materials Creating drawing, design and construction in the geometry classroom	2 - 9	**86**

4.6	**HARRADINE, Anthony** / Potts Baker Institute, Prince Alfred College Practicing your way to mastery	All	**83**
4.7	**McMAHON, Leanne** / AMSI – Australian Mathematical Sciences Institute Learning through Podcasts – Maths Talk PD, Student Podcasts, Parent Podcasts	All	**84**
4.8	**ABDELAL, Nadia** / eXpanding Minds Maths Consulting Teaching Middle School Maths for Conceptual Understanding	6 - 9	**85**
4.9	**BOOTH, Helen and CAPURSO, Sam** / MASA and Blackfriars Priory School Investigating Investigations	7 - 10	**87**
4.10	**MAENPAA, Marjut** / Pembroke School Using multiplication grids	9 - 12	**M23**

11.30 pm – 12.30 pm – **Workshop 5** –

Session	Presenter and title	Yr levels	Room
5.1	**ANDREWS, Justina** / Grant High School Build your own Desmos Activity	7 - 12	**82**
5.2	**BUTLER, David** / University of Adelaide Digit Disguises: a game of algebraic deduction	All	**73**
5.3	**KISSANE, Barry** / Murdoch University, WA Sequences, series and calculators	11 - 12	**85**
5.4	**FROSSINAKIS, Tom and DAVIS, Neil** / MASA Maths is the Stem of STEM	7 - 12	**71**
5.5	**BOOTH, Helen** / MASA Origami at the intersection of algebra, geometry and measurement	7 - 12	**84**
5.6	**HARRADINE, Anthony** / Potts Baker Institute, Prince Alfred College TEACHING FOR UNDERSTANDING (TFU)	All	**83**
5.7	**MURPHY, Michael** / Norwood Morialta High School and University of Adelaide The case for shorter assessments	7 - 12	**72**
5.8	**HAESE, Michael** / Haese Mathematics Pty Ltd A cat, a ladder, and a spinning wheel	9 - 12	**74**
5.9	**NARAYAN, Thevy and RULE, Vanessa** / Pearson Australia – **via ZOOM** Pearson Diagnostic: Gaining insights into students' mathematical thinking	5 – 10	**86**
5.10	**LENGHAUS, Christine/** TAFE Gippsland Sharing is Caring – Taking on the challenge of teaching division	3-10	**87**

12.30 pm – 1.30 pm – **Lunch – visit Trade Displays** /

1.30 pm – 2.30 pm **Workshop 6** –

Session	Presenter and title	Yr levels	Room
6.1	**STEPHENSON, Brett** / Guilford Young College Life, death and chaos with sequences	10 - 12	**71**
6.2	**PONSAING, Dr Anita and BEAN, Professor Nigel** / ACEMS – University of Adelaide MathsCraft – Doing Maths like a Research Mathematician	5 - 10	**72**
6.3	**WILLCOCKS, Irene** / Adelaide Botanic High School Structuring Mathematical Discussions within the Classroom	9 - 11	**73**
6.4	**PACE, Leanne and RANIERI, Thomas** / Glenunga International High School and Pulteney Grammar School Inspiring classroom activities and games for middle school learning	7 - 9	**74**
6.5	**JAMES, Dr Susan** / The University of Melbourne – **WORKSHOP UNAVAILABLE** Engagement beyond the curriculum	5 - 12	
6.6	**HEATH, Isabel** / Cabra Dominican College Racing with a Difference	12	**83**

6.7	**GARRETT, Rebecca** / Trinity College First Nations Culture: How can we authentically add this context to our maths classroom?	7 - 12	**84**
6.8	**CHAPMAN, Colin** / Caroline Chisholm Catholic College Using Wolfram Mathematics and SystemModeler as computational responses to the emerging Australian Mathematics Curriculum	7 - 10	**85**
6.9	**RUCKERT, Ann and CHALLIS, Graham** / Open Access College How can we teach maths in an online situation and make it engaging?	7 - 10	**86**
6.10	**McMAHON, Leanne/** AMSI Building Capacity to sustain growth in Mathematics	All	**87**

NAME and ABSTRACT	Workshop	Years
ABDELAL, Nadia / eXpanding Minds Maths Consulting Teaching Middle School Maths for Conceptual Understanding Engaging students in maths at the middle school level can often be difficult. Many students can hit road blocks during this critical stage of their mathematical development and as a result lose the ability to connect with some of the higher order skills. This hand-on workshop will focus on conceptual ways to teach some of the more abstract concepts like fractions, decimals, algebra and geometry so that students can more easily access the pure maths involved in tackling problems associated with these concepts.	**4.8**	**6 - 9**
ANDREWS, Justina / Grant High School Introduction to Desmos Activities Learn how Desmos Activities can increase student engagement, enable class discussions, and support student learning. This workshop will demonstrate how to effectively run a Desmos Activity in your classroom, and how to find appropriate activities for your curriculum. You will need to bring your own device if you would like to do your own exploring.	**1.1**	**7 - 12**
ANDREWS, Justina / Grant High School Build your own Desmos Activity Learn how to create your own Desmos Activity to suit your students' needs. This workshop will demonstrate how to create activities using the various components available in Desmos Activity Builder, and briefly touch on the Computation Layer. You will need to bring your own device and may like to bring a worksheet or task that you like that you would like to transform.	**5.1**	**7 - 12**
ATTARD, Professor Catherine / Western University Sydney – via ZOOM Mathematical Games to Promote the Proficiencies Games are often used as an 'add-on' in primary mathematics classrooms yet they can be a valuable resource to develop, practice and assess the proficiencies. In this hands-on workshop participants will explore a range of games that promote the Australian Curriculum: Mathematics proficiencies. Particular attention will be paid to teacher strategies for promoting mathematical communication and reasoning. Participants will also discuss how games can assist in promoting substantive cognitive, operative and affective engagement in mathematics.	**2.1**	
ATTARD, Professor Catherine / Western University Sydney – via ZOOM Becoming Mathematicians: Conducting Mathematical Investigations How often do you and your students conduct deep investigations into the patterns and relationships in mathematics? Do mathematical investigations always have to link to real life contexts? In this session participants will explore in detail the process of conducting mathematical investigations (or investigations of mathematics) that promote mathematical thinking, reasoning, and communication. Participants will conduct a mathematical investigation in order to understand the processes that they should be encouraging in the mathematics classroom.	**3.1**	**3 - 8**
BLENCOWE, Jacinta / Bendigo South East College Handling hands on – using hands on materials in the classroom As students get older we often 'forget' about using hands on materials in this workshop a variety of hands on materials will be played with and linked to curriculum planning.	**2.2**	**3 - 8**

BLENCOWE, Jacinta / Bendigo South East College Connecting Maths to Real Life - Engaging Secondary Students Engaging secondary students in maths is hard. "Why do we have to do this?" is a common question. This workshop aims to explore some "real life" tasks and units of work to engage 7 - 10 students.	**4.1**	**7 - 10**
BOOTH, Helen / MASA Fractionally too late by Year 5 The concepts of fractions and division are identified as predictors of mathematics achievement in high school. As the first real abstract mathematical concept students meet, many struggle with the most basic fractional concepts, consistently applying their whole number basis, leading to misconceptions and frustration. By year 5, many students are already missing virtual knowledge, hence the title, Fractionally too late by Year 5".	**2.7**	**Primary**
BOOTH, Helen / MASA Origami at the intersection of algebra, geometry and measurement The japanese art of paper folding has a long history, though its foundations in geometry and algebra have only been explored over the past 100 years or so. This lesson investigates the algebraic relationship between the 3 dimensional measurements of an origami box and the 2 dimensional starting size paper. Using Excel to collect data and determine the algebraic relationship with the aim of creating a container to hold a personal item.	**5.5**	**7 - 12**
BOOTH, Helen / MASA and CAPURSO, Sam / Blackfriars Investigating Investigations MASA is currently developing a resource to support students and teachers in completing an investigation and writing a mathematical report. The focus will be on reasoning and language. The resource will provide activities for Year 7 to Year 10 with scaffolding reduced as one progresses through the year levels. We would love to gain your insights into what you think is needed in such a resource! You are invited to a conversation about areas to target when engaging with this kind of task type.	**4.9**	**7 - 10**
BUTLER, David / University of Adelaide Digit Disguises: a game of algebraic deduction I invented the game of Digit Disguises in 2019 and since then it has become a firm favourite among my students and colleagues. The game involves strategy and deduction and using algebra in and unexpected way. It can also lead to some very sophisticated explorations. In this session you will play the game in teams, then reflect on your experience playing the games and discuss ways to use it in your classroom.	**5.2**	**All**
BUTLER, David / University of Adelaide Exploring deltahedra A deltahedron is a solid shape with flat faces that are all the same equilateral triangle. They are the perfect mix of freedom and constraint for mathematical exploration. In this session you will use hands-on building materials to explore deltahedra, including collecting data, making conjectures and forming arguments. Then you will reflect on your experiences of mathematical exploration so that you can help you own students explore.	**2.3**	**All**
CAPURSO, Sam / Blackfriars Priory School and MAZZAROLO, Lauren / Seymour College Maths 'fillers' This workshop will explore a variety of mini-explorations and activities students can undertake at almost any stage of their mathematics learning. A variety of tasks linked to various strands of the Australian Curriculum that students can 'play' with will be presented and there will be a discussion of how the teacher can use questioning and inquiry strategies to illicit deeper thinking from their students.	**2.9**	**6 - 10**
CHALMERS, Jennifer / The Royal Institution of Australia – WORKSHOP UNAVAILALBE Combining S.T.E and M through the use of design challenges Experience how maths can be taught alongside science, technology and engineering to provide students with real life applications and context for their learning, ensuring engagement in, and motivation for, the subject.	**1.2**	**7 - 10**
CHALMERS, Jennifer / The Royal Institution of Australia – WORKSHOP UNAVAILABLE Using SCINEMA films to put Maths in context The SCINEMA International film festival showcases the best scientific films from around the world. These are then curated into playlists for schools to use film as the perfect	**3.2**	**R - 10**

medium to engage students in a formative and entertaining way. See how to use the films and associated teaching resources here.		
CHAPMAN, Colin / Caroline Chisholm Catholic College Using Wolfram Mathematics and SystemModeler as computational responses to the emerging Australian Mathematics curriculum Computational processes and tools are emerging as a key concern for the Australian Curriculum - Mathematics. This workshop demonstrates the integration of Wolfram SystemModeler, Mathematics and the Arduino microcontroller to visualise and explore logic statements, inequalities, rations and input/output processes. Modelling and simulation activities will also be explored in experimental contexts.	**6.8**	**7 -10**
DEMPSEY, David / Analytic Business Partners The Secret to Partnering with CSIRO's STEM Professionals The world faces massive life-threatening problems which current professionals and eventually your students must solve. Industry and governments are willing to support your work in the classroom to encourage the next generation of professionals to stay engaged. We'll be guided by your concerns and suggestions, and offering strategies and STEAM based resources to improve engagement through real world problems and professionals.	**2.10**	**F - 12**
FELSTEAD, Brad / The Maths Show Maths Magic and Mind Reading We present a range of maths mind reading and magic tricks to the teachers, and challenge them to work out the maths underneath the tricks. We then supply any answers that they can't work out and provide them with tips on how to use the tricks with the students. It's lots of fun!	**2.4**	
FOX, Peter / Texas Instruments Programmed Success Coding represents a lot more than a 21st Century career opportunity. Coding promotes logic and reasoning, critical thinking and perseverance, the ability to contextualise and de-contextualise a problem. These are valuable skills for mathematicians at all levels. The problems presented here all contain mathematical content relevant to the high school mathematics curriculum and are well served by the inclusion of an appropriate level of coding. Participants in this session do not need any prior coding experience as the focus is on the mathematics.	**2.5**	
FOX, Peter / Texas Instruments Mathemagicians Exposed A special group of magicians referred to as Mathemagicians entertain audiences creating illusions of computational wonderment. Just like their theatrical cousins, Mathemagicians have a number of techniques. In this session, participants will learn the secrets behind some of those tricks. Use them on your students! This is not just about entertainment, students uncover all sorts of mathematics whilst learning who to perform the tricks. No need to set homework after these classes, students rehearse the skills so they can perform the trick on their parents!	**4.2**	
FROSSINAKIS, Tom and DAVIS, Dr Neil / MASA Maths is the STEM of STEM A hands on workshop / discussion / presentation highlighting the critical and central role of mathematics in the STEM initiative. Rotating stations of experiences demonstrating the utility and beauty of mathematics in a wide variety of applications.	**5.4**	**7 - 12**
FROST, Valerie / Blackfriars Priory School Extension Maths for Primary Grades This workshop gives teachers a hands-on experience of the enrichment activities I have been using with students across Years 2 to 6. While it has focussed on the more talented students across these Year levels much could be used in mainstream to encourage mathematical thinking. I access a range of resources from the Maths Trust and the APSMO (Australasian Problem-Solving Mathematical Olympiad). Students are given experience of the problem-solving techniques often applied to questions.	**3.11**	**Primary**
GARRETT, Rebecca / Trinity College Senior First Nations Culture: How can we authentically add this context to our maths classroom? One of the cross-curriculum priorities in the Australian Curriculum is Aboriginal and Torres Strait Islander histories and cultures. Our role as educators is to authentically	**6.7**	**7 - 12**

incorporate this learning into our classrooms. In this workshop we will look at examples of ways to engage our secondary students in discussions around Aboriginal and Torres Strait Islander histories and cultures. Participants will test out these mathematics activities and work together to consider questions students may ask in the classroom.		
HAESE, Michael / Haese Mathematics Pty Ltd A cat, a ladder, and a spinning wheel (a session on a mathematical concept) Locus is a topic now rarely mentioned in syllabuses, but some of its ideas are not just helpful but actually essential for defining some basic shapes such as a circle, a sphere, and a straight line. At the top end of school, locus gives us geometric definitions for the other conic sections, and connect their geometry with their algebraic definitions. In this session we will give a short presentation of these principles, then spend time applying the ideas to some fun practical questions, including a cat on a ladder, and a spinning wheel.	**5.8**	**9 - 12**
HARRADINE, Anthony / Potts Baker Institute, Prince Alfred College Problem Solving your way to "power" Come along and work towards solving a problem. A nice one! We will consider why it was 'nice' and ways of working with problems within timetabled lessons.	**2.6**	**All**
HARRADINE, Anthony / Potts Baker Institute, Prince Alfred College Practicing your way to mastery Assuming students should practice: - what should they practice? - why should they practice? - what should practice look like? Through Year 7/8 Geometry. We will discuss possible answers and see some examples.	**4.6**	**All**
HARRADINE, Anthony / Potts Baker Institute, Prince Alfred College TEACHING FOR UNDERSTANDING (TFU) What does TFU mean? What does TFU include? Through conversation and examples from various topics, including Year 7/8 Geometry we will board some answers to these questions.	**5.6**	**All**
HEATH, Isabel / Cabra Dominican College Racing with a Difference The task I created, "Racing with a Difference" requires students to design a Jet Boat racing track using mathematical modelling. The area of approximation, integration and differentiation are incorporated within the task. The use of kinematics to simulate and evaluate the track is fundamental to the task.	**6.6**	**12**
JAMES, Dr Susan / The University of Melbourne - WORKSHOP UNAVAILABLE Engagement beyond the curriculum The University of Melbourne Maths and Stats outreach team are running programs and activities to engage students by getting them to think and work as mathematicians and by introducing them to concepts outside the curriculum. The workshop gives a description of some of these programs and the resources which are available to schools across Australia. It also describes the key concepts behind creating these extension activities.	**6.5**	**5 - 12**
KISSANE, Barry / Murdoch University, WA Mathematics, health and risks While medical testing and health risks have become more prominent in this age of the pandemic, it has always been important for students to learn about these and their communication, in the media and elsewhere, in order to become numerate adults. We will explore some difficulties and opportunities for this in this hands-on workshop, aimed at a general mathematics teaching audience other than focussing directly on classroom practice.	**1.8**	**10 - 12**
KISSANE, Barry / Murdoch University, WA Calculus concepts and calculators Sound learning of the calculus requires students to understand a number of key concepts, such as rate of change, derivative function, limit and convergence. Graphics calculators offer many opportunities to help students engage actively with these sorts of concepts; we will explore some of these opportunities together in this hands-on workshop.	**3.8**	**11 - 12**
KISSANE, Barry / Murdoch University, WA Sequences, series and calculators Sequences and series are fundamental mathematical ideas, and so there are a number of ways in which they can be represented, profitably investigated and	**5.3**	**11 -12**

efficiently handled on graphics calculators by students, to develop intuitions and understandings as well as to solve practical problems. We will explore some of these together in this hands-on workshop.		
KORBOSKY, Richard / Dapma Pty Ltd Maths Card Games 'which make you think' Dual Oh Brain Training Maths Card Games are an infectious strategy that improves mental thinking, makes the brain think and is a fun maths learning activity for all learners.	**3.4**	**F - 9**
KORBOSKY, Richard & John LAWTON / Objective Learning Materials Creative drawing, design and construction in the geometry classroom We introduce the Mathomat geometry template range and discuss how it supports creative geometry teaching and improves student geometry understandings. This session is an opportunity for teachers to explore the classroom potential of the Mathomat Primary and the Mathomat Secondary templates, the new Mathomat whiteboard, the new MATHOBLOCK manipulative range and the student activity manuals.	**4.5**	**2 - 9**
KUEH, Michelle / Mangahigh – WORKSHOP UNAVAILABLE Mastering Growth Mindset in Maths How do we ensure we are not promoting a false growth mindset? Praising students for their effort alone, or telling them "they can do anything", while provide positive reinforcement - does not actually help students become more successful. Educators need to praise students' process while connecting it to their performance, learning and progress. Learn how to develop a Growth Mindset Workflow within the heart and mind of your students with Mangahigh.	**1.3**	**R - 10**
LANNEN, Brian / Murray Mathematics Curriculum Services – via ZOOM Efficient and Effective use of TI-84PlusCE in the General Mathematics Exam In this session we will look at questions from the 2020 SACE General Mathematics Exam and demonstrate the ways in which users of the TI-84PlusCE calculators can benefit and save time in reaching solutions and checking answers. Participants will explore how to efficiently utilise features of the TI-84PlusCE to answer typical examination questions.	**1.9**	**11 - 12**
LANNEN, Brian / Murray Mathematics Curriculum Services – via ZOOM Know Your Limits - a Calculus Introduction Teaching functions and calculus with the TI-84PlusCE is limited only by your imagination. Functions, composite functions, derivatives, dynamic derivatives, numerical integration and solving problems will be in this workshop. We'll maximise our time to minimise yours.	**3.9**	**11 -12**
LENGHAUS, Christine/ TAFE Gippsland Sharing is caring: Taking on the challenge of teaching division A hands on workshop designed to support teachers with the topic of division. With many of our students finding division a challenge, this session includes the resources I have used or created which have been most successful for my students to learn sharing/division.	**5.10**	**3-10**
LOVEJOY, Jakeb / Esri Australia – via ZOOM Using ArcGIS online for Measurement and Geometry Explore how the use of ArcGIS Online, and its in-built measurement tools, can be used to engage students when teaching perimeter, area and decomposition of complex shapes. Attendees should bring own device.	**1.10**	**7 - 9**
LOVEJOY, Jakeb / Esri Australia – via ZOOM Using Survey 123 for Statistical analysis Explore who you can use Survey123 to describe and interpret numerical data using your own class survey data. Take it one step further and look at your data on a amp and provide further insight when undertaking the interpretation process. Bring your own device.	**3.10**	**7 - 9**
LOWRY, Cassandra / St Francis of Assisi Primary School Tarneit Cuisenaire Rods - More than just colourful blocks After a downturn in popularity during much of the 80s and 90s, Cuisenaire rods have started to make a comeback in classrooms across the country. But how can they be used to support student learning? Are they best used to investigate early number concepts, or do they have a more extensive educational purpose? This workshop will provide opportunities for participants to explore various uses of the rods, including games, challenges and as a tool to support student learning. It will demonstrate how	**1.4**	**F - 6**

such a resource can be used to help students think flexibly about numbers and unpack how such tasks can be integrated into a balanced mathematics program.		
LUPTON, Alastair / Adelaide Botanic High School Dogball - a study of bounce Dogball is an enigma, the bouncy toy exterior hides a rich yet accessible modelling task within; a delicious intersection of maths and science, a potential Folio task for Stage 1 Maths Methods featuring low floor, high ceiling and room for unique student response, and just a great bit of maths. In this workshop you will share in the adventures of Dogball, think about the data that he creates and the ways that this data could be modelled. You will gain access to the data in csv format, as well as a range of videos to support the use of Dogball in your classroom.	**3.5**	**10 -12**
LUPTON, Alastair / Adelaide Botanic High School Dogball - in the dog house This workshop is an (optional) extension to the workshop Dogball - a study of bounce. In this workshop you will have a chance to develop a functional model for the dogball height data. You will have access to an extended data set, to see just how successful you were with your model. A video solution, and some clever bits of calculator functionality, will also be shared. Bring a device that will enable you to download a CSV file and develop a functional mathematical model, or use a loan Casio CG50, with all the data pre-loaded.	**4.3**	**10 - 12**
MAENPAA, Marjut / Pembroke School Using FX Draw FX Draw software provides a comprehensive drawing environment that can produce graphs, diagrams and anything really that a maths teachers may need to create. For this workshop it would be useful, but not essential for attendees to bring a device with FX Draw installed.	**1.11**	**All**
MAENPAA, Marjut / Pembroke School Using multiplication grids The workshop introduces some geometric algebra across the mathematical landscape including multiplying, dividing and factoring algebraic expressions. A new way to complete the square will also be demonstrated.	**4.10**	**9 - 12**
McMAHON, Leanne / Australian Mathematical Sciences Institute (AMSI) Learning through Podcasts - Maths Talk PD, Student Podcasts, Parent Podcasts Leanne McMahon is the host, producer and editor of the successful AMSI Maths Talk Podcast. In this session she will talk about the Podcast and how it can be used in your Professional Learning, how to use podcasts in your mathematics classes and how to engage parents and the wider community with podcasts. She will discuss the best editing software and her tricks and tips for making podcasts. You will have the opportunity to contribute to the MathsTalk Podcast, either by giving suggestions or being part of an interview.	**4.7**	**All**
McMAHON, Leanne / Australian Mathematical Sciences Institute (AMSI)/Building capacity to sustain growth through Mathematics This session will unpack the 4 principles the CHOOSEMATHS program used to build teacher's capacity in Mathematics. Data is essential to identify the key focus of professional learning and teacher support. Planning, availability of onsite skilled teachers who can coach and support, and the opportunity for teachers to embed what they learn in the classroom round out the list.	**6.10**	**All**
MURPHY, Michael / Norwood Morialta High School and University of Adelaide The case for shorter assessments Assessments in the middle and senior years are often viewed through the lens of year 12 assessments. In this workshop the case is made for shorter assessments that may provide students and teachers both a better opportunity to demonstrate Their learning, and also a better preparation for senior assessments, too.	**5.7**	**7 - 12**
NARAYAN, Tevy and RULE, Vanessa / Pearson Australia – via ZOOM Pearson Diagnostic: Gaining insights into students' mathematical thinking This session focusses on how using a digital diagnostic assessment tool can make planning for learning more specific to your students' needs. By establishing students' thinking and understanding of distinct concepts, ready-to-use 'targeted activities' enable teachers to address learning needs by facilitating upskilling, the repairing of misconceptions and where needed, an enrichment focus. Participants will need own device and access to the internet.	**5.9**	**5 -10**

NAUM, Constantin / Woodville High School A proposed folio task for Statistics and Calculus The presentation looks at generating and using a probability density function (PDF) for a continuous random variable, by using calculus and mathematical modelling techniques. Please bring a graphics calculator.	**2.8**	**11 - 12**
O'KANE, Daniel / Mathspace Mathspace - blurring the line between assessment and learning Mathspace has released a new continuous assessment and growth reporting program called Waypoints. A separate program to Mathspace, it allows teachers to track student growth against achievement standards from the Australian Curriculum. This workshop will demonstrate how both Waypoints and Mathspace can be used together to combine assessment and learning.	**1.5**	**3 - 12**
O'SHAUGHNESSY, Glenn / Education Perfect Education Perfect on-line assessments: data, feedback, personalisation and growth This presentation will showcase the power and flexibility of the assessment platform within EP. Assessments generate detailed strengths and weaknesses reports for students and can be set to automatically assign personalised remediation work. Spaced assessments can be compared via a detailed growth report, which highlights cohort and student improvement within topics. An extensive range of pre-built assessments including diagnostics, are available. Additionally, teachers can create their own questions or entire assessments via the user-friendly EP studio tool.	**4.4**	**5 – 12**
PACE, Leanne and RANIERI, Thomas / Glenunga International High School and Pulteney Grammar School "A collection of short activties and games will be presented and demonstrated. These are intended to be used to complement traditional classroom learning and cover a range of strands and topics across the Middle School mathematics curriculum. You will also take home a digital PD packet with all of the resources you need to implement these activities."	**6.4**	**7 - 9**
PONSAING, Dr Anita and BEAN, Prof Nigel / ACEMS, University of Adelaide MathsCraft – Doing Maths like a Research Mathematician MathsCraft is a program that enables students to experience doing maths like a research mathematician. In a MathsCraft session, participants use ideas with which they are operational, in mathematical adventures that will see them explore, solve, create and understand. The aim of this workshop is to give upper primary and lower secondary teachers a taste of what happens in MathsCraft sessions and the philosophy behind it, as well as information about the new MathsCraft Curriculum.	**6.2**	**5 - 10**
PROCHAZKA, Helen / Zenolith Why I love maths and many students don't! Content will include some of the latest neuroscience research relating to learning, observations and experiences resulting from many years in classrooms, some snippets from "The Mathematics Book" and even some poetry and a maths song.	**3.7**	**All**
QUANE, Dr Kate / University of South Australia Understanding children's attitudes towards mathematics This workshop will share research conducted in South Australian schools with students in Years 2 and 3 regarding their attitudes towards mathematics. The workshop will explore strategies for ascertaining attitudes and all provide teachers with a range of tools to implement in their classrooms.	**1.12**	**R - 10**
RUCKERT, Ann and CHALLIS, Graham / Open Access College How can we teach maths in an online situation and make it engaging? Participate in an online lesson with attendees taking the role of students. Please bring your device and headset. Please download WebEx to participate.	**6.9**	**7 – 10**
STEPHENSON, Brett / Guilford Young College Life death and chaos with sequences This workshop will investigate recursive sequences that often model life and death situations and exhibit both order and chaos. A Casio fxCG50AU will be used to investigate how the behaviour of the sequences can be tabulated and graphed to be able to discover the underlying pattern that emerge. Other technologies can be used for this workshop and will also be demonstrated. Participants should be prepared to accept that PI and e are important but are not the only important irrational constants.	**6.1**	**10 - 12**

WEST, Dr John / AAMT What's new in Math 300? In 2019, I was hired to update the look and feel of all 194 existing Maths 300 lessons and to assist in migrating the content across to the new website, thereby giving Maths 300 some much-needed (and long-overdue) TLC. In 2020, I was appointed to Chair the new Maths 300 Writers' Group, which has so far developed 15 brand-new lessons, all of which are now live on the new site. In this workshop, I will explore the new Maths 300 site (including the new browser-based software), share with you some of the new content and AAMT's plans to continue to add value for existing and new subscribers (such as new Maths 300 YouTube channel).	**3.3**	**2 - 12**
WHEAL, Michael / MASA Finding Talent Quest Material in the annual program session one Several topics to be introduced and opened for student investigation	**1.6**	**9 - 12**
WHEAL, Michael / MASA Finding Talent Quest Material in the annual program session two Several topics to be introduced and opened for student investigation	**3.6**	**9 - 12**
WILLCOCKS, Irene / Adelaide Botanic High School Structuring Mathematical Discussions withing the Classroom This workshop will introduce the *5 Practises for Orchestrating Mathematical Discussions* by Smith and Stein. These practises link cognitively demanding Inquiry Tasks to the disciplinary ideas we want students to know. I will share my experience using this framework to structure mathematical discussions in my classroom. These practises aim to provide teacher control over student-centred pedagogy. You will learn to anticipate, monitor, select, sequence, and connect student responses to the sort of multilevel tasks presented by resources such as *Rich Tasks for 10A* by Pauline Carter."	**6.3**	**9 - 11**
WOODARD-KNIGHT, Deb and FROST, Valerie / Walford Anglican School for Girls and Blackfriars Priory School Teacher Year 12 Specialist Maths This is a repeat of the session on teaching tips held at the MASA Year 12 Conference night in February. Techniques and tips on the teaching of Specialist Maths will be discussed and hopefully the session will also promote open discussion with others sharing ideas.	**1.7**	**12**

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