The Mathematical Association of South Australia Inc

MASA Annual Conference 2019

Thursday 18th & Friday 19th July

St Peters College
Hackney Road, St Peters

St Peter's College

MATHS PATHWAY

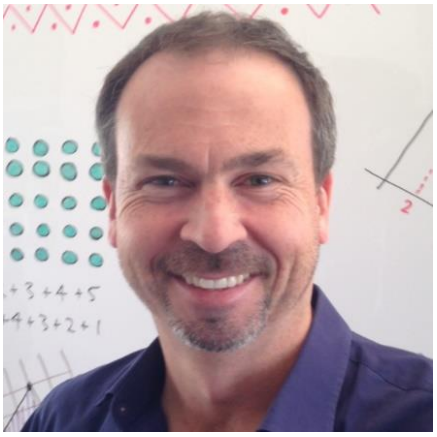
Texas Instruments

credit unionsa

Australian Government
Australian Taxation Office

PROGRAM	
DAY 1	**THURSDAY 18TH JULY, 2019**
8:30 am – 8:50 am	**Registration** – Big School Room - tea and coffee available
8:50 am – 9:00 am	**Welcome and Housekeeping** – Big School Room
9:00 am – 9:20 am	**Sponsorship Speaker** – Big School Room • Leanne Waller / **Maths Pathway** • Peter Fox / **Texas Instruments**
9:20 am – 10:30 am	**The Carol Moule Keynote Address** – Big School Room **Dr James Tanton** / Mathematician-at-Large for The Mathematical Association of America
10.30 am – 11:00 am	**Sponsorship Speaker** – Da Costa Dining Hall • John Elvin / **Credit Union** **Morning Tea** / **visit Trade Displays** / Da Costa Dining Hall
11:00 am – 12.00 pm	**Workshop 1**
12:05 pm – 1:05 pm	**Workshop 2**
1:10 pm – 2:00 pm	**Lunch** / **visit Trade Displays** / Da Costa Dining Hall
2:05 pm – 3:05 pm	**Workshop 3**
3:10 pm – 4:10 pm	**"Maths Games Happy Hour" Sponsored by CASIO** / Da Costa Dining Hall - nibbles & refreshments provided
DAY 2	**FRIDAY 19TH JULY, 2019**
8:30 am – 8.50 am	**Registration** – Big School Room - tea and coffee available
8:50 am – 9.00 am	**Welcome and Housekeeping** – Big School Room
9:00 am – 9:25 am	**Sponsorship Speakers** – Big School Room • Bernadette Webster / **Australian Maths Trust**
9:30 am – 10:40 am	**Plenary 1** – Big School Room **& Plenary 2** – Room 25 Secondary Plenary 1 - **Mike Clapper** / Chief Mathematician for the Australian Maths Trust OR Primary Plenary 2 - **Dr James Tanton** / Mathematician-at-Large for The Mathematical Association of America
10.40 am – 11:00 am	**Sponsorship Speaker** – Da Costa Dining Hall • Joanna Coulter / **CASIO** **Morning tea** / **visit Trade Displays** / Da Costa Dining Hall
11:05 am – 12:05 pm	**Workshop 4**
12:10 pm – 1:10 pm	**Workshop 5**
1:10 pm – 2:00 pm	**Lunch** / **visit Trade Displays** / Da Costa Dining Hall
2:05 pm – 3:05 pm	**Workshop 6**
3:10 pm – 4:10 pm	**"Happy Hour" Sponsored by the Australian Maths Trust** / Big School Room – nibbles & refreshments provided - **Raffle / Prize draws**

The Carol Moule Keynote Address - Thursday 18th July – Day 1



Dr James Tanton / Mathematician-at-Large for The Mathematical Association of America

Bio: James Tanton (PhD, Princeton 1994, mathematics) is an author, a consultant, and an ambassador for the Mathematical Association of America in Washington D.C., currently serving as their Mathematician-at-Large. He has taught mathematics both at university and high-school institutions. James is absolutely committed to promoting effective and joyful mathematics thinking, learning, and doing at all levels of the education spectrum.

James writes books and video courses, advises on curriculum, consults with teachers, and gives demonstration classes and professional development sessions across the globe. He created the MAA's Curriculum Inspirations project, serves as chair of the Advisory Council for the National Museum of Mathematics, and is a founder of The Global Math Project, an initiative set to transform the entire world's perception of what mathematics can and should be. Over 5 million students across the planet have taken part in a common joyous piece of mathematics to see how classroom mathematics serves as a portal for human joy, wonder, and delight.

Abstract: All Years

HOW MANY DEGREES ARE IN A MARTIAN CIRCLE?
And other human - and nonhuman - questions one should ask about everyday mathematics.

Who chose the number 360 for the count of degrees in a circle? Why that number? And why do mathematicians not like that number for mathematics?

Why is the preferred direction of motion in mathematics counterclockwise when the rest of world naturally chooses clockwise?

Why are fingers and single digit numbers both called *digits*? Why do we humans like the numbers 10, 12, 20, and 60 particularly so?

Why are logarithms so confusing? What happened to the vinculum? Why did human circle-ometry become trigonometry?

Let's spend a moment together exploring curiosities from the human – and nonhuman – development of mathematics.

Secondary Plenary 1 - Friday 19th July – Day 2

Mike Clapper / Chief Mathematician for the Australian Maths Trust

Bio: Mike Clapper is currently the Chief Mathematician for the Australian Mathematics Trust and Chair of the AMC Problems Committee. He has been a teacher and school principal for over 40 years and is passionate about embedding problem-solving into the mathematics classroom.

Abstract: This session focuses on ways in which you can help your students to become better problem-solvers. A variety of techniques which commonly occur in competition problems will be demonstrated with examples and strategies for delivery. We will also look at ways in which you can make problem solving a part of your classroom culture.

Primary Plenary 2 - **Friday 19th July – Day 2**

Dr James Tanton / Mathematician-at-Large for The Mathematical Association of America

Bio: Please see above – page 3

Abstract:

Explode your Mind with Exploding Dots: A Global Phenomenon

It's a global phenomenon in mathematics! Over 5 million people -- students, educators, math enthusiasts – from over 170 countries and territories across the planet are united by the stunning wonder of a common piece of school mathematics. It's the story of Exploding Dots. Let me share this mind-blowing story with you too!

See the school mathematics you thought you knew so well in astounding new light. Witness curriculum mathematics as a portal to human joy, wonder, and awe.

DAY 1	Thursday 18th July, 2019
8:30 am – 8:50 am	**Registration** – Big School Room - tea and coffee available
8:50 am – 9:00 am	**Welcome and Housekeeping** – Big School Room
9:00 am – 9:20 am	**Sponsorship Speakers** – Big School Room • Leanne Waller / **Maths Pathway** • Peter Fox / **Texas Instruments**
9:20 am – 10:30 am	**The Carol Moule Keynote Address** – Big School Room **Dr James Tanton** / Mathematician-at-Large for The Mathematical Association of America
10.30 am – 11:00 am	**Sponsorship Speaker** – Da Costa Dining Hall • John Elvin / **Credit Union** **Morning Tea** / **visit Trade Displays** / Da Costa Dining Hall

11:00 am – 12:00 pm **Workshop 1** –

Session	Presenter and Title	Yr levels	Room
1.1	**ABDELAL Nadia/** Australian Mathematical Sciences Institute **Talking Number Talks**	F-10	5
1.2	**HARRADINE, Anthony /** Prince Alfred College **Dogball**	9-11	24
1.3	**KELLAWAY, Jo /** ASMS **Tricks, Tools and Gimmicks**	All	6
1.4	**KISSANE, Barry /** Murdoch University **Learning mathematics in the middle years with a scientific calculator**	7-9	11
1.5	**LORIMER-DERHAM, Andrew /** Think Square **The 'must-have' skill for now and the future**	Primary	25
1.6	**MURPHY, Michael** / Cornerstone College **Leading from the Middle**	Middle Senior	12
1.7	**OKE, Anne /** MASA **Principle of Mathematical Induction**	11-12	7
1.8	**ROWE, John /** SA Department for Education **Hook Line Sinker**	All	8
1.9	**SIDHU, Reeta /** Australian Tax Office **Free ATO resources for authentic learning**	Secondary	10

1.10	**AGNEW, Dylan /** Kadina Memorial School **Starting Out** – (This workshop is aimed at new teachers)	8-12	4

12.05 pm – 1.05 pm **Workshop 2** –

Session	Presenter and title	Yr levels	Room
2.1	**ALBRECHT, Amie** / University of South Australia **Developing mathematical thinking through problem solving**	6-12	24
2.2	**BAMENT, John** / O'Loughlin Catholic College **The Art of Mathematics**	7-12	10
2.3	**CAPURSO, Sam /** Westminster School **The battle of the x's – algebra in the middle years**	5-8	12
2.4	**DI CORPO, Sophie and TAVARES, Daniela /** ASIC MoneySmart Teaching Team **Financial literacy**	F-12	11
2.5	**LUPTON, Alastair /** Le Fevre High School **Scepticism, false positives, and the power of statistics**	11-12	7
2.6	**RABONE, Jeff /** Student Robotics Club SA Inc **Starting Your FIRST Tech Challenge Robotics Team**	7-12	25
2.7	**SKOSS, Matt /** Australian Association of Maths Teachers **Working like a mathematician**	3-12	6
2.8	**TANTON, James /** Global Maths Project **PERMUTATIONS AND COMBINATIONS: Removing the "Does Order Matter?" headache**	Secondary	5
2.9	**WOODARD-KNIGHT, Deb /** Walford Anglican School for Girls **Specialist Mathematics Investigations**	12	8
2.10	**MAZZAROLO, Lauren /** Seymour College **Constructing and using a task-specific rubric** – (This workshop is aimed at new teachers)	7-12	4

1.10 pm – 2.00 pm – **Lunch** – **visit Trade Displays** / Da Costa Dining Hall

2:05 pm - 3:05 pm **Workshop 3** –

Session	Presenter and title	Yr levels	Room
3.1	**BUTLER, David and Jonathan Hage, Jonathon Pantelis, Lyron Winderbaum /** University of Adelaide **SQWIGLES – a tool for helping yourself help students**	All	24
3.2	**CLAPPER, Mike /** Australian Maths Trust **Convergent and Divergent Thinking**	5-12	8
3.3	**CUMMINS, Sabika /** Cambridge University Press **Come and see the new Cambridge Essential Mathematics for the Australian Curriculum 3rd Edition in action.**	7 - 10	12
3.4	**LENGHAUS, Christine /** Huntingtower School **Making maths visual – almost no rote required**	3-9	7
3.5	**LORIMER-DERHAM, Andrew /** Think Square **Rich tasks are everywhere (hands-on workshop)**	Primary	11
3.6	**MAENPAA, Marjut /** Pembroke School **Using Tracker for Mathematical Modelling**	8-12	6
3.7	**MURPHY, Michael /** Cornerstone College **CANCELLED WORKSHOP** **Capability informed investigation in Middle School**	Middle	
3.8	**SOUTHWELL, Lisa /** St Peter's College **Statistics and telling the story**	11-12	5
3.9	**ZACHARIA, Zac / Centra Wealth Group** **Mathematics and geometry of the investment markets**	Any	10
3.10	**GARRETT, Rebecca /** Trinity College **Pedagogy for the Maths Classroom** – (This workshop is aimed at new teachers)	7-12	4

3.10 pm – 4.10 pm – **"Maths Games Happy Hour" Sponsored by CASIO** – Da Costa Dining Hall - nibbles & refreshments provided

DAY 2	Friday 19th July, 2019
8:30 am – 8.50 am	**Registration** – Big School Room - tea and coffee available
8:50 am – 9.00 am	**Welcome and Housekeeping** – Big School Room
9:00 am – 9:25 am	**Sponsorship Speaker** – Big School Room • Bernadette Webster / **Australian Maths Trust**
9:30 am – 10:40 am	**Plenary 1** – Big School Room **& Plenary 2** – Room 25 Secondary Plenary 1 - **Mike Clapper** / Chief Mathematician for the Australian Maths Trust OR Primary Plenary 2 - **Dr James Tanton** / Mathematician-at-Large for The Mathematical Association of America
10.40 am – 11:00 am	**Sponsorship Speaker** – Da Costa Dining Hall • Joanna Coulter **/ CASIO** **Morning tea** / **visit Trade Displays** / Da Costa Dining Hall

11:00 am – 12:00 pm **Workshop 4** –

Session	Presenter and title	Yr levels	Room
4.1	**BOOTH, Helen /** Australian Mathematical Sciences Institute **Fractionally more interesting than Pizzas and pies**	3-8	4
4.2	**BUSHBY, Wendy and Sandy Russo /** Private tutor/SPELD **Dyscalculia – what it represents and my experiences with a dyscalculic student**	All	25
4.3	**BUTLER, David** / University of Adelaide **The goal is not the goal, the end is not the end: extending maths as you go**	All	24
4.4	**CARTER, Pauline /** SA Department for Education **Take the Money – Investigation into chance**	6-9	6
4.5	**KISSANE, Barry /** Murdoch University **Financial mathematics and the graphics calculator**	11-12	5
4.6	**JERRAM, Bill** / MASA **MASA Project to bring Advanced Maths to Rural Students**	8-12	12
4.7	**LENGHAUS, Christine /** Huntingtower School **Visual maths: Fractions, decimals and percentages**	3-9	10
4.8	**OKE, Anne /** MASA **Four learning activities for those Friday afternoon lessons.**	6-9	7
4.9	**MCPHERSON, Raiph, /** Seaton High School **Visualising mathematics using desmos.com**	10-12	8
4.10	**SKOSS, Matt /** Australian Association of Maths Teachers **Algorithmic (computational) thinking**	3-10	11

12:05 pm – 1:05 pm – **Workshop 5** –

Session	Presenter and title	Yr levels	Room
5.1	**ANDREW, David** / MASA **Mathematical modelling – investigating real world problems**	6-11	6
5.2	**BAMENT, John** / O'Loughlin Catholic College **There are 10 types of people in the world**	5-12	12
5.3	**CLAPPER, Mike /** Australian Maths Trust **A picture is worth a thousand equations**	7-10	5
5.4	**FOX, Peter /** Texas Instruments **Great Explorations**	Secondary	10

5.5	**GARRETT, Rebecca** / Trinity College **Adding a little competition into the maths classroom**	7-12	4
5.6	**HARRADINE, Anthony** / Prince Alfred College **Mathematics is…** **CANCELLED WORKSHOP**	6-12	8
5.7	**KELLAWAY, Jo** / ASMS **Con Tested – Going Beyond the SAT**	Senior	11
5.8	**MURPHY, Michael and George Sainsbury/** Cornerstone College **Collaborative Planning in Mathematics**	All	25
5.9	**ROWE, John** / SA Department for Education **Desmos Driving Lessons -** (Please bring your own device)	All	7
5.10	**WOODARD-KNIGHT, Deb** / Walford Anglican School for Girls **Teaching for Understanding**	11	24

1:10 pm – 2.00 pm – **Lunch – visit Trade Displays** / Da Costa Dining Hall

2:05 pm – 3:05 pm **Workshop 6** –

Session	Presenter and title	Yr levels	Room
6.1	**AGNEW, Dylan** / Kadina Memorial School **Doing Maths – a taste of MathsCraft from a participant**	7-12	7
6.2	**BUTLER, David** / University of Adelaide **Useful Puzzles**	All	24
6.3	**DAVIS, Dr Neil and FROSSINAKIS, Tom** / ASMS and Glenunga International High School **Getting started with Project-based Competitions**	R-12	25
6.4	**FOX, Peter** / Texas Instruments **steM = Putting the M back into STEM**	Secondary	6
6.5	**KISSANE, Barry** / Murdoch University **Logarithms and the graphics calculator**	11-12	5
6.6	**LORIMER-DERHAM, Andrew** / Think Square **Mind your language**	Primary	12
6.7	**MCPHERSON, Raiph,** / Seaton High School **Can a bottom-up approach improve SACE (FORUM)**	11-12	8
6.8	**TANTON, James** / Global Maths Project **EXPLODING DOTS: a deeper dive**	Primary	10
6.9	**GORMAN, Vanessa** / St Peter's College **Conjecture Workshop**	7-12	11

3.10 pm – 4.10 pm – **"Happy Hour" Sponsored by the Australian Maths Trust** –
/ Big School Room – nibbles & refreshments provided
Raffle / Prize draws

NAME and ABSTRACT	Workshop	Years
ABDELAL Nadia/ Australian Mathematical Sciences Institute **Talking Number Talks** The development of number fluency is an integral part of the success in mathematics. In this hands-on workshop, will be discussing number talks, how to deliver one in your classroom and how we adapt them to support various areas of number such as fractions and decimals.	**1.1**	**F-10**
AGNEW, Dylan / Kadina Memorial School **Doing Maths – a taste of MathsCraft from a participant** MathsCraft is an outreach program promoting teacher and students working on open-ended maths problems (among other things). Last year, I went on a one-day workshop, and then a 5-day, live-in program. In this workshop, I hope to work through a problem as a group - to give you a taste of why I think this was the best professional development I have ever been involved in!	**6.1**	**7 - 12**
AGNEW, Dylan / Kadina Memorial School **Starting Out** This is the workshop I wanted as a pre-service and 1st- year teacher. This will be the best of what I have learnt over the past three years, including resources, teaching styles, finding a job/teaching pracs and generally things I wanted to be told early on. Particularly aimed at new/pre-service teachers. This workshop is aimed at new teachers.	**1.10**	**8-12**
ALBRECHT, Amie / University of South Australia **Developing mathematical thinking through problem solving** We'll sample some good problems for uncovering aspects of problem-solving and developing mathematical thinking skills. We'll also talk about specific strategies for progressively developing oral presentation and mathematical writing skills. My goal is that you'll find one or two specific ideas that will help in your current teaching.	**2.1**	**6-12**
ANDREW, David / MASA **Mathematical modelling – investigating real world problems** The mathematical modelling process uses mathematics to improve the understanding of real-world situations, and to help make predictions and decisions relevant to the real world. It acts as a bridge between the real world and mathematics. Modelling the real world to solve problems is an important aspect of the Australian Curriculum, particularly relevant to the problem-solving proficiency strand. This workshop will look at several mathematical models designed to help students understand how to investigate some aspect of the real world and apply their mathematical knowledge to solve real-world problems.	**5.1**	**6-11**
BAMENT, John / O'Loughlin Catholic College **There are 10 types of people in the world** The demand for computer science skilled students worldwide has never been higher. With numerous websites, apps, STEM kits, graphics calculators, competitions and games 'offering' a multitude of options, it has never been so easy or fun to have a go. We won't be using punch-cards, but the aim is for you to experience some of these options and leave with some practical ideas that suit you and your students.	**5.2**	**5-12**
BAMENT, John / O'Loughlin Catholic College **The Art of Mathematics** How does computer software draw a square, equilateral triangle, or, for that matter, any polygon? In this practical, hands-on workshop you will program a robotic car to draw various shapes and solve numerous puzzles. Leave this workshop with your own piece of Mathematical Art and some practical examples to use in the classroom.	**2.2**	**7-12**
BOOTH, Helen / Australian Mathematical Sciences Institute **Fractionally more interesting than Pizzas and pies** In this session, a wide variety of mathematical problems traditionally solved algebraically or by other complex means will be solved by the use of a simple, powerful picture. Participants will be given some work to do (in a playful way) but all will even.	**4.1**	**3 - 8**

BUSHBY, Wendy and Sandy Russo / Private tutor/SPELD **Dyscalculia – what it represents and my experiences with a dyscalculic student** Recognised in the 1940s, it is only recently that "research in cognitive and developmental neuroscience has provided a new approach to the understanding of Dyscalculia" (Brian Butterworth, 2011). Over the years, many students have just been labelled failures at mathematics and never expected to pass. It is important that teachers understand the limitations placed on students with Dyscalculia but then work with them to succeed. I will outline my experiences in the last 5 years with a student who was taken for diagnosis because he could not tell the time in year 5, came to me for tutoring in year 7, and is now doing General Mathematics in Year 11 (achieving a B- in his last test, which was Statistics). Sandy Russo is going to talk about the services related to mathematical difficulties that SPELD SA offers.	**4.2**	**All**
BUTLER, David and Jonathan Hage, Jonathon Pantelis, Lyron Winderbaum / University of Adelaide **SQWIGLES – a tool for helping yourself help students** SQWIGLES is an acronym we use in the Maths Learning Centre at the University of Adelaide to help the staff focus on important features of the way they interact with students. In this session you will learn about these actions and try some of them out, and you will hear from school-teachers about how they use SQWIGLES in their own practice.	**3.1**	**All**
BUTLER, David / University of Adelaide **The goal is not the goal, the end is not the end: extending maths as you go** I believe every student deserves to explore their understanding of maths concepts and have their curiosity fostered. The mantra of "the goal is not the goal; the end is not the end" is a way to allow for this exploration in everyday maths classrooms without special extension activities. In this session we will discuss doing this everyday exploration using maths topics that the participants choose.	**4.3**	**All**
BUTLER, David / University of Adelaide **Useful Puzzles** I like to create puzzles that allow people to think about things in new ways, and that can generate productive discussion when people do them in groups. In this session you will get the chance to play with some of my favourite of these puzzles together in groups, and then discuss your experiences of solving them and how you might use the puzzles as part of your teaching.	**6.2**	**All**
CAPURSO, Sam / Westminster School **The battle of the x's – algebra in the middle years** This workshop will strengthen your proficiency with identifying patterns, formulating rules and using notation useful when considering the Algebra strand. In this way, you can support students' problem-solving and communication skills.	**2.3**	**5-8**
CARTER, Pauline / SA Department for Education **Take the Money – Investigation into chance** This session presents an investigation into a game of chance, Take the Money. Participants work mathematically to notice and explore results in order to develop and test strategies. It provides opportunities to experience and discuss the concept of randomness.	**4.4**	**6-9**
CLAPPER, Mike / Australian Maths Trust **A picture is worth a thousand equations** In this session, a wide variety of mathematical problems traditionally solved algebraically or by other complex means will be solved by the use of a simple, powerful picture. Participants will be given some work to do (in a playful way) but all will eventually be revealed!	**5.3**	**7-10**
CLAPPER, Mike / Australian Maths Trust **Convergent and Divergent Thinking** The best problem-solvers have the capacity to think in both a convergent (sequential) and a divergent (lateral) way. This workshop explores how both of these important aspects of mathematical thinking can be promoted in the classroom. A large number of tested resources will be made available to participants.	**3.2**	**5-12**

CUMMINS, Sabika / Cambridge University Press **Come and see the new Cambridge Essential Mathematics for the Australian Curriculum 3rd Edition in action.** Essential Mathematics for the Australian Curriculum Third Edition retains all of the features that have made this series so popular, and now offers a new level of digital support alongside important revisions and additions to address the needs of a wider range of students and provide even greater support for teachers, including:• additional questions added to every worked example • revised treatment of the proficiency strands • activities for Dependent, Guided and Independent ability levels • tools to helps students keep track of their progress • The Interactive Textbook – integrated with Cambridge HOTmaths – allows effortless and immediate navigation from the textbook content to over 200 video demonstrations of worked examples in every year level, interactive widgets and walkthroughs that visually represent and reinforce maths concepts. Online workspaces and self-assessment functionality. • The Online Teaching Suite – allows you to easily assign work, create customised tests and report on progress with the learning management system (LMS) in this essential teaching resource. **Attendees will receive a complimentary textbook of the new edition**	**3.3**	**7 - 10**
DAVIS, Dr Neil and FROSSINAKIS, Tom / ASMS and Glenunga International High School **Getting started with Project-based Competitions** Ideas and examples of how to use investigative processes to have students present their findings in their areas of interest (or passions). The competition is open to all year levels and attendees will be shown examples of student work that earned substantial prizes.	**6.3**	**R-12**
DI CORPO, Sophie and TAVARES, Daniela / ASIC MoneySmart Teaching Team Financial literacy is the key to support young people to be in control of their financial lives. It is important that all teachers feel confident and empowered to teach financial literacy. Going beyond arithmetic skills and includes authentic contexts to develop young people's knowledge, skills and behaviours to: manage money day by day, plan and save for the future and make informed decisions. This seminar presents current research in financial capability education showcases MoneySmart's professional learning opportunities and guides you through resources you can use and adapt to your classroom.	**2.4**	**F-12**
FOX, Peter / Texas Instruments **Great Explorations** Great mathematics problems engage students in thinking and often have multiple entry and exit levels. Most textbook questions focus on skill and drill; they typically contain a single process or procedure; occur in clusters of similar problems and often rely on rote and repetition. In this workshop participants explore mathematics problems which utilise basic skills but provide opportunities to extend and enrich learning. Technology will be used in this workshop - BYO Technology (calculators will be available.	**5.4**	**Secondary**
FOX, Peter / Texas Instruments **steM = Putting the M back into STEM** This popular acronym (STEM) attracts significant funding, professional development and media, but in my experience the M is often left out. How is STEM being included in your school? In this workshop we will discuss STEM implementation and explore mathematics problems that are STEM inclusive. Examples will include, "Random Walks", great coding problems and much more! Technology will be used in this workshop - BYO technology (calculators will be available)	**6.4**	**Secondary**
GARRETT, Rebecca / Trinity College **Pedagogy for the Maths Classroom** This workshop will provide new teachers with a guide on how to structure a lesson. Focus will be on effective teaching strategies that engage students in learning mathematics. This workshop is aimed at new teachers.	**3.10**	**7-12**

GARRETT, Rebecca / Trinity College **Adding a little competition into the maths classroom** This workshop will give you the opportunity to engage in some competitive games that can be used in your maths classroom. Participants will leave with the skills to create their own games. We will try out each activity, so be ready for a little maths and a little competition!	**5.5**	**7-12**
GORMAN, Vanessa / St Peter's College **Conjecture Workshop** A conjecture is a statement which appears reasonable, but whose truth has not been established. The process of conjecturing hinges on being able to recognise a pattern or an analogy, in other words, on being able to make a generalisation. In a world we are able to receive information instantly, how do we develop a resilience in our students to persist with a mathematical conjecture to its conclusion? I believe that a student's willingness to persevere and find solutions needs to be developed and fostered in young student's experiences in the classroom as often as possible. As teachers, we need to ask the right questions and create a safe classroom for these skills to develop. In this workshop I will provide a suggested outline of sequential problems which you can use with your students, to develop these skills, for all year levels (years 7-12) from various sources. Be prepared to try some yourself!	**6.9**	**7-12**
HARRADINE, Anthony / Prince Alfred College **Dogball** This activity is perhaps my favourite ever quadratic experience. It can be done with students from Year 9 to 11, has a simple aspect and then a totally surprising (to me, at least) ending that will excite you (well it excited me). It can be a grand learning task, or lends itself to be crafted into an assessment task. You Choose. You will love Dogball!	**1.2**	**9-11**
HARRADINE, Anthony / Prince Alfred College **CANCELLED WORKSHOP** **Mathematics is…** Mathematics seems to be many things, depending on your taste/experiences/... One thing it is, according to Dr Anita, is the study of structure. structure /ˈstrʌktʃə/ noun the arrangement of and relations between the parts or elements of something complex. I believe if kids could appreciate this, they may see mathematics in a very different light. Who knows, structure might be the next 'thing'. Come along and I will share a journey for students (and adults) that aims to help them appreciate that mathematics is a study off structure. The journey should be accessible to students from Year 6 to 12. At the very least, I think you will be amused.	**5.6**	**6-12**
JERRAM, Bill / MASA **MASA Project to bring Advanced Maths to Rural Students** Explanation/description of 3 projects already undertaken under the auspices of MASA to enhance Maths education in rural schools. Explanation of future planning for an extension of the program.	**4.6**	**8-12**
KELLAWAY, Jo / ASMS **Tricks, Tools and Gimmicks** A taste of a range of software, all free, that can be used in your class to enthuse and engage students while looking at building skills and monitoring progress. We will look at the more familiar, Like Geogebra and Desmos, and the less common, like Quizlet Live. Bring your laptop and have some fun.	**1.3**	**All**
KELLAWAY, Jo / ASMS **Con Tested – Going Beyond the SAT** How can we use alternative means of assessment to gauge the abilities of our students? At the ASMS, we have been using oral presentations as one of the SATs at Stage 2, for several years. Last year, we added a new component - the Prac SAT. This workshop will present what we did, and how it was received. It is also a chance to discuss what you are doing, or can do, that is different.	**5.7**	**Senior**

KISSANE, Barry / Murdoch University **Financial mathematics and the graphics calculator** The mathematics of finance is important both in the curriculum and in the everyday life of working adults, and so has recently been highlighted in secondary school curricula. Modern graphics calculators offer significant support for financial mathematics. In this session, we will explore this support and consider how it might be used by students and teachers.	**4.5**	**11-12**
KISSANE, Barry / Murdoch University **Logarithms and the graphics calculator** Logarithms continue to be important, although no longer used directly by students for computation. In this session, we will explore several ways in which a graphics calculator can be used by students to develop a sound understanding of the nature, properties and uses of logarithms.	**6.5**	**11-12**
KISSANE, Barry / Murdoch University **Learning mathematics in the middle years with a scientific calculator** In the middle years (the final years of primary school and the early years of secondary school), calculator use is often restricted to computation, and so the use of scientific calculators to support sound conceptual learning is easily overlooked. In this workshop, we will explore some examples of some potential benefits for students in the middle years learning about fractions, powers, measurement and variables.	**1.4**	**7-9**
LENGHAUS, Christine / Huntingtower School **Making maths visual – almost no rote required** A student's multiplicative thinking using visual strategies which go from primary level through to polynomial division.	**3.4**	**3-9**
LENGHAUS, Christine / Huntingtower School **Visual maths: Fractions, decimals and percentages** A hands-on workshop designed to use strategies to teach fractions, decimals and percentages and continue development of multiplicative thinking and proportional reasoning.	**4.7**	**3-9**
LORIMER-DERHAM, Andrew / Think Square **The 'must-have' skill for now and the future** Complex problem-solving, critical thinking and creativity. These are the top three skills listed by the World Economic Forum for future employment. As teachers we use these skills every day to manage behaviour, prioritise tasks and deliver two years of content in one! Developing your creativity will not only benefit you personally but will improve your teaching practise, especially of maths, because, at its core mathematics is a creative endeavour. In this workshop you will: try activities to develop critical and creative thinking both in and outside the classroom. Hear stories about what it takes to turn ideas into reality from someone who has experienced the highs and lows of the creative journey. Learn more about what helps and what hinders creativity. Enjoy playful curiosity. Becoming more creative will open opportunities, enrich your teaching and help you solve problems you didn't think were possible.	**1.5**	**Primary**
LORIMER-DERHAM, Andrew / Think Square **Rich tasks are everywhere (hands-on workshop)** Rich tasks are all around you if you learn to see them. In this hands-on workshop you will be introduced to a range of rich learning activities with a low-floor and high-ceiling to engage any learner. Learning through Intentional fun allows students to take risks, embrace challenges and explore possibilities.	**3.5**	**Primary**
LORIMER-DERHAM, Andrew / Think Square **Mind your language** Getting lost overseas isn't much fun, especially when you can't read the signs or speak the language! For a lot of students, solving maths problems feels much the same. The good news is, we can do something about it. In this session, you'll be shown a range of engaging hands-on activities to provide a meaningful context for the use and repetition of mathematical terms. Learning by immersion is the fastest, most natural way to understand language, so let's make use of it by immersing our students in the world of mathematics.	**6.6**	**Primary**

LUPTON, Alastair / Le Fevre High School **Scepticism, false positives, and the power of statistics** In a world of news, fake news and statistics, mathematics gives us the power to test claims and assess evidence. In this workshop, the assessment of an outlandish claim will be our introduction to dichotomous events and the binomial distribution that models them so well. Through a couple of engaging contexts, we will travel from probability and counting, via tree diagrams, to the binomial distribution in all its glory, along with associated computations and graphical representations. Sceptical? Let the power of statistics convince you!	**2.5**	**11-12**
MAENPAA, Marjut / Pembroke School **Using Tracker for Mathematical Modelling** Tracker is a free video analysis and modelling tool. This workshop will demonstrate how Tracker can be used in the classroom and by students in an investigation. For example, modelling the path taken by shooting a basketball or a point on the rim of a rotating wheel.	**3.6**	**8-12**
MAZZAROLO, Lauren / Seymour College **Constructing and using a task-specific rubric** The session will focus on how task-specific rubrics can be constructed and utilised as a tool for effective feedback to support students in understanding their academic performance. A crucial part of the assessment process is ensuring quality feedback occurs to the learner, and creating assessment rubrics specific to each task can aid in teachers being able to efficiently provide qualitative and informative feedback given the realistic nature of the busy classroom. This workshop is aimed at new teachers.	**2.10**	**7-12**
MCPHERSON, Raiph, / Seaton High School **Visualising mathematics using desmos.com** The Desmos.com graphing website is a very useful tool for visualising mathematical concepts and allows for experimentation and curiosity-driven learning. This session will expand upon the previous Stage 2 workshop presented earlier in the year and will show how the Desmos tools can be used in a wide range of applications in grades 10-12 to accelerate construction of mathematical understanding. Participants should bring laptops.	**4.9**	**10-12**
MCPHERSON, Raiph, / Seaton High School **Can a bottom-up approach improve SACE (FORUM)** A world-class education system cannot be a one-size fits all approach. In this discussion forum we will critique the prescriptive nature of SACE, its moderation processes and the resistance to CAS technology. Examples of other jurisdictions will be shared in order to offer insights and suggestions and to stimulate discussion. we will also share ideas for how teachers can act as catalysts for continued improvement.	**6.7**	**11-12**
MURPHY, Michael / Cornerstone College **Leading from the Middle** In this session, an exploration of a three year journey as a Mathematics Learning Area leader will be shared. Attendees will be able to explore the successes, failures, joys, and challenges of leading a mathematics faculty. Experienced leaders will benefit from learning about introducing innovative practices to a learning area, while emerging or potential leaders will be able to gain understanding and strategies to enhance their capacity as a new Mathematics leader.	**1.6**	**Middle/Senior**
MURPHY, Michael / Cornerstone College **CANCELLED WORKSHOP** **Capability informed investigation in Middle School** In this session, attendees will be presented with the process of planning teaching, assessing and providing feedback on, mathematics tasks in the middle school that explicitly aim to develop the capabilities alongside Mathematics. The tasks presented provide the opportunity for students to develop their capacity to thinks creatively and critically, as well as to apply their knowledge and understanding of Probability, Statistics, and Number.	**3.7**	**Middle**

MURPHY, Michael and George Sainsbury/ Cornerstone College **Collaborative Planning in Mathematics** In this session, the two presenters, one a teacher and the other a data architect from the Plant Accelerator at the University of Adelaide, explain and explore how they collaborate to create learning for students. Attendees will be able to take away the process that the pair used, as well as an authentic learning task that was co-created to apply mathematics of a professional within the classroom.	**5.8**	**All**
OKE, Anne / MASA Principle of Mathematical Induction Learn ways to develop your own test questions on mathematical induction. Problems covered will include divisibility and partial sums.	**1.7**	**11-12**
OKE, Anne / MASA **Four learning activities for those Friday afternoon lessons.** We will go through some fun activities, with worksheets provided for you to take back to your classroom. They are designed so students can discover patterns, see the power of algebra to generalise a situation and develop writing skills to explain and summarise the mathematics.	**4.8**	**6-9**
RABONE, Jeff / Student Robotics Club SA Inc **Starting Your First Tech Challenge Robotics Team** "FIRST" – For Inspiration and Recognition of Science and Technology. There are currently 10 FIRST Tech Challenge Robotics teams in SA Schools. We now have our own State competition in November each year. The team challenge is issued in September. Lots of practical Maths, and a true STEM practical project. Grants are available to schools meeting certain criteria. Be sure to find out how your school can get involved. This year about 20 new teams are already formed – join them. Robots will be on display.	**2.6**	**7-12**
ROWE, John / SA Department for Education **Hook Line Sinker** Harnessing the curiosity of students is easier when you are introducing a new topic or concept to them, but when students need to develop their understanding at a deeper level or consolidate their learning, what comes next? Back to the textbook? Maybe a worksheet? Participants of this workshop will learn how the Hook-Line-Sinker approach can help make rich tasks the norm of core learning in maths and not merely a selection of "one-hit wonders".	**1.8**	**All**
ROWE, John / SA Department for Education **Desmos Driving Lessons –** (Please bring your own device) Unlike many other online learning tools, Desmos is designed to increase student dialogue and harness the opportunities of student collaboration. Using the teacher dashboard to effectively pilot activities and utilise the full functionality of Desmos can enable teachers to facilitate highly productive mathematical discussions. Used ineffectively, however, can result in a quiet and stale learning environment, where student are learning slide-by-slide, rather than side-by-side.	**5.9**	**All**
SIDHU, Reeta / Australian Tax Office **Free ATO resources for authentic learning** The Australian Taxation Office offers free resources for teachers and students on a range of taxation and superannuation topics aligned to the Australian Curriculum. In this workshop, you will be shown how you can use these resources in your classroom to support learning in authentic and meaningful ways.	**1.9**	**Secondary**
SKOSS, Matt / Australian Association of Maths Teachers **Working like a mathematician** This session will model a range of practical classroom approaches that can be used to foster students of all ages working like a mathematician. Rich lessons will be drawn from professional learning resources including Maths300, reSolve and other projects, and used as a vehicle to model lessons structures to enable working like a mathematician. A feature of the tasks is that they address curriculum outcomes from multiple strands, a particular strength of Maths300 and reSolve.	**2.7**	**3-12**

SKOSS, Matt / Australian Association of Maths Teachers **Algorithmic (computational) thinking** This session will model practical lessons from the free resources, including Computer Science Unplugged and Bebras. Some lessons can be used at different scales (eg Kinesthetic/outside/tabletop) can be varied in complexity and used as a vehicle for different curriculum strands of mathematics.	**4.10**	**3-10**
SOUTHWELL, Lisa / St Peter's College **Statistics and telling the story** Understanding diversity and pursuing inclusivity is an ideal we are striving for as a community. How can we bring this discussion into the Maths Classroom? This workshop provides stats lessons to help students discuss the data. We make use of single variable data analysis and fitting a linear model to numerical data.	**3.8**	**11-12**
TANTON, James / Global Maths Project **EXPLODING DOTS: a deeper dive** Continuing on from the Primary Plenary.	**6.8**	**Primary**
TANTON, James / Global Maths Project **PERMUTATIONS AND COMBINATIONS: Removing the "Does Order Matter?" headache**	**2.8**	**Secondary**
WOODARD-KNIGHT, Deb / Walford Anglican School for Girls **Specialist Mathematics Investigations** A discussion of approaches to two of the SACE investigations will be presented with emphasis on a modelling style of approach.	**2.9**	**12**
WOODARD-KNIGHT, Deb / Walford Anglican School for Girls **Teaching for Understanding** Teaching strategies to enhance student engagement and learning with understanding are discussed. A particular section of Stage 1 Mathematics (Trigonometry) is highlighted to show how it can be taught for understanding rather than rote learning.	**5.10**	**11**
ZACHARIA, Zac / Centra Wealth Group **Mathematics and geometry of the investment markets** Technical analysis is the study of the price and trends in the investment markets. Mathematics and geometry have been developed and applied successfully by investors who adopt this philosophy and Zac will explain the core concepts behind how he uses it to manage his client portfolios.	**3.9**	**Any**

St Peter's College

KEY

1. Oval House (Visitors and Enquiries)
2. Old School House
3. Memorial Hall
4. Chapel
5. Big School Room
6. Multimedia Centre
7. Miller Library
8. Da Costa Dining Hall
9. Florey Science Centre
10. Technology and Art
11. Drama Centre
12. Grounds and Maintenance
13. Brookman Pavilion
14. Gordon Building
15. Pentreath Building
16. Infirmary
17. Tuckshop
18. Main Oval Pavilion
19. Boarding House
20. Athelney House
21. Hill Wing
22. Uniform Shop
23. Junior School
24. Palm House
25. Early Learning Centre
26. Junior School Hall
27. Shinkfield Building
28. Sports Centre

ATTENDEES CARPARK
Hackney Road Entrance -
Cross Main Oval to No. 5
Big School Room
For Registration

8. Da Costa Dining Hall
TRADE DISPLAYS
CATERING

DA COSTA DINING HALL

25. PLENARY 2

25 | 24 | 23

5. Big School Room
REGISTRATION
WELCOME
HOUSEKEEPING
PLENARY 1

BIG SCHOOL ROOM

BIG QUAD

13
12
11
10

CONFERENCE WORKSHOPS

3 | 4 | 5 | 6 | 7 | 8

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