Saturday 25th June – Session Descriptions (note: *sessions - streamed to regional centres/recorded)

*Opening Keynote (Virtual) Simon Singh

From Theorems to Serums, From Cryptology to Cosmology ... and The Simpsons

Join popular science and maths writer, Simon Singh, on a whistle-stop tour through two decades of his bestselling books. Fermat's Last Theorem looks at one of the biggest mathematical puzzles of the millennium; The Code Book shares the secrets of cryptology; Big Bang explores the history of cosmology; Trick or Treatment asks some hard questions about alternative medicine; and Simon's most recent book, The Simpsons and Their Mathematical Secrets, explains how TV writers, throughout the cartoon's twenty-five-year history, have smuggled in mathematical jokes.

Concurrent Workshops 1 (55min)

*** Queensland Senior Mathematics Syllabus review and revision**

Evan Winters (QCAA) (Senior secondary) (Curriculum)

The QCAA has started the review and revision phase for the General syllabuses. The aim of this session is to share some of the current feedback, share some of the current activities to address the feedback, and to seek feedback from Mathematics teachers on these current developments. This is another opportunity for teachers to provide feedback directly to the QCAA about the Queensland Senior Mathematics Syllabuses.

Evan Winter is the Learning Area Manager for Mathematics and is responsible for all aspects of Queensland's Senior Mathematics Syllabuses. He has taught secondary Mathematics at all levels from year 8 to year 12 with over 20 years of in-class experience. In recent years he has worked at the QCAA as the Senior Education Officer for Mathematics A, then the Principal Education Officer for Specialist Mathematics, General Mathematics and Mathematical Methods.

Year7-9 Maths - Enrichment/Extension using Graphics Calculators

Melissa Hourigan (Murrumba Sate Secondary College) *(Junior Secondary) (Pedagogies, Curriculum)*

This session will look at activiites and strategies for incorporating graphics calculators into junior classes to enrich/extend the curriculum.

A high school mathematics teacher for over 20 years Melissa Hourigan enjoys incorporating technology, specifically graphics calculators, into her junior and senior mathematics lessons to create interest in the content. Her current interest is in using graphics calculators to help flip her lessons.

Designing and implementing effective mathematical modelling tasks.

*Prof Vince Geiger (*Program Research Director: STEM in Education, Institute of Learning Sciences and Teacher Education, Australian Catholic University*) (7-10) (Pedagogies)*

In this presentation, I will outline and discuss effective approaches to the teaching and learning of mathematical modelling tasks in secondary school classrooms. The ideas behind the presentation are the outcome of a three-year project where researchers worked in collaboration with teachers in their own classrooms. As part of the presentation, exemplars of classroom trialled tasks will be presented with advice about how these maybe adapted for different year levels or classroom settings.

Vince Geiger is a professor of mathematics education within the Institute for Learning Sciences and Teacher Education (ILSTE), Australian Catholic University. He is Director of the STEM Education: Design and Growth Across the Disciplines program within ILSTE – an interdisciplinary research space focused on the enabling and transformative role of mathematics within the STEM disciplines ur. His work is driven by awareness that the capacity to know and use mathematics confidently is important for an individual's career prospects and their empowerment as informed citizens. This awareness has inspired over 130 research publications. Vince joined ACU in 2005 after a successful 22-year career as a secondary school teacher of mathematics and science. Over that time, he held national positions such as President of the Australian Association of Mathematics Teachers and Chair of the National Education Forum. He has extensive experience with curriculum and assessment development including more than a decade on Queensland curriculum and assessment committees and panels.

Exploring the Major Changes in the Number Strand of the New K-3 Australian Curriculum.
James Burnett (ORIGO edu) (P-3) (Curriculum)

The new Australian Mathematics Curriculum has many changes that will greatly impact your teaching of several concepts and skills in the NUMBER strand. This session will explore the content and pedagogical knowledge you will need to implement those changes.

To know and grow your students every day.
Jacinta Browning and Jacqueline Clark (Essential Assessment) (Primary and Jnr Secondary) (Sponsor)

In this presentation we will introduce our assessment model aligned to the Australian Curriculum P-10, which supports teachers to make data-informed decisions. We will share authentic classroom experiences of our differentiated Numeracy assessment and curriculum model, which diagnostically assesses each student. The presentation will highlight the use of Individual and whole class data to target each student's Zone of Proximal Development and identify a learning pathway to foster student growth, engagement as well as mapping of students to the National Numeracy Progressions. All participants will receive 30-day complimentary use of the platform.

Jacinta Browning has been teaching in Catholic Primary Schools in the Cairns, Tasmanian & Sale Dioceses for 25 years. Jacinta has recently completed her Masters of Clinical Teaching (Melbourne University). She is a passionate and energetic leader who partners with teachers to ensure rigorous professional data-driven conversations as well as facilitates conversations to enhance collective teacher efficacy as well as enhance student learning. Currently located in SE Melbourne, as the Manager for Teaching and Learning at Essential Assessment, Jacinta supports teachers providing a best-practice approach when using the Essential Assessment platform. Experienced in capturing teachers' hearts and minds through the webinar medium, Jacinta relishes the opportunity to work with primary and secondary educators within the field of Literacy and Numeracy across all Australian Curricula.

Jacqueline Clark is a primary trained educator with 30 years of experience in education. She is passionate about teaching literacy. After many years of classroom teaching experience, Jacqueline qualified as a Reading Recovery teacher. Jacqueline was the lead teacher in implementing the Levelled Literacy Intervention program across her school, coaching teachers from Foundation to Year Six. Jacqueline has also worked closely with EAL students in a primary school setting, supporting these students to access the English curriculum. Located in south-east Queensland, Jacqueline is a Professional Learning Specialist for Essential Assessment. She works with schools across Australia to facilitate the use of the Essential Assessment platform in both primary and secondary school settings. Jacqueline provides professional learning support within both the Victorian and Australian Curricula as well as the NSW syllabus. Jacqueline is proud to partner with schools to build teacher capacity and provide insights into Essential Assessment as a way to know and grow students.

***Panel Discussion - The what and why of the revised P-10 Australian Curriculum**
Chair: *Allan Dougan (AAMT CEO)*
Panel Members:
Rachael Whitney-Smith (ACARA Curriculum Specialist Mathematics)
Pof. Vince Geiger (Program Research Director: STEM in Education, Institute of Learning Sciences and Teacher Education, Australian Catholic University ACU)
Prof. Chris Matthews (ATSIMA)
Narelle Morris (Member of the Teacher Reference Group)
Fact Checker: *Monique Russell (QAMT)*

***Masterclass 2: 1-4pm**
MATHS300 – AAMT

Maths300 has an underlying principle that each lesson will encourage students to learn through inquiry, to collaborate and to think like mathematicians. Teachers and students find the Maths 300 activities and investigations to be a positive and engaging way of exploring and understanding mathematical concepts in the classroom.

In this masterclass we will explore the Maths300 lesson structure, including innovative features for students and teachers and creative pedagogies. We will take a deep dive into some of our favourite lessons and give delegates the opportunity to explore the resources, including supporting software. Delegates will be given the opportunity to collaborate with others to plan how they can use Maths 300 in their individual contexts. Prepared to be

challenged and have fun whilst completing tasks! Walk away with lessons to use with your students and share with your colleagues.

Maths300 is a library of over 200 innovative maths lessons that cover all the content strands of the Australian Curriculum: Mathematics from Foundation to Year 12. The resource has been used and valued by Australian teachers for many years and its ongoing popularity is testament to the effectiveness and high quality of the lessons.

Jennifer Bowden has worked as an Education Consultant at the Mathematical Association of Victoria (MAV) for 15 years. She enjoys inspiring teachers, maths coaches, consultants and leaders to become more critical and creative in their teaching, empowering consultants and teachers to be better educators and provide the best learning experiences for their students. Jen coaches, mentors and guides consultants, teachers, and leaders to build teacher capacity, increase knowledge of curriculum content, and to develop better pedagogies to establish school-wide improvement. Jen's current interest is in helping teachers and leaders to improve education in a way that promotes and challenges students' thinking.

Concurrent Workshops 2 (55min)

Appropriate Technology use in Senior Mathematics
Peter Fox (Texas Instruments) (Sponsor) (Senior secondary) (Pedagogies)

Would you like to maximise the benefits of Graphing Calculators in your senior mathematics classes? In this session I will share experiences and resources gleaned from more than 25 years working with digital technology in mathematics, writing and vetting technology inclusive examinations with the VCAA, University research into technology designed specifically for teaching and learning mathematics and also working with the Texas Instruments on the development of TI-Nspire and TI-Navigator. This session promises to go way beyond pushing buttons!

Wait for it – the importance of time
Janine Sprakel (Australian Maths Trust) (Junior secondary) (Disposition)

Time in mathematics is so much more than the curriculum and content implications. In this session we will look at how your time can be best used in the implementation of a problem-solving classroom:
• Providing better feedback to students by not answering their questions immediately
• Making use of problems that require a deep dive (and take more time to solve)
• Utilising your planning and preparation time to anticipate student reactions to problems and getting yourself ready to respond on your feet

Janine Sprakel works with teachers all over Australia to grow their confidence and capacity in teaching and learning of mathematical problem solving.

Building Effective and Equitable Classrooms.
Allan Dougan (CEO, AAMT) (P-10) (Pedagogies)

In this session we will explore the characteristics of an effective and equitable classroom. We want all students to feel motivated and inspired to realis their full potential in mathematics. We will explore the ideas of engagement and equity in our classrooms.

Allan is CEO of the Australian Association of Mathematics Teachers. He trained as a high school maths teacher. He taught and held senior leadership positions in Australian and Scotland before spending 5 years working in Educational Technology. He joined AAMT as CEO in December 2020.

Concurrent Workshops 3 (55min)

Technology-active examinations in Mathematical Methods – What have we learned?
Alastair Lupton (STEM Teacher, Adelaide Botanic High School) *(Senior secondary) (Curriculum)*

In 2019 QCAA shared the details of technology-active exams in Year 12 Maths Methods, something very new for Queensland teachers. Since then, we have seen two cohorts go through this form of assessment. How did they go? What were they expected to know and do? How did the technology perform? This workshop will provide an

opportunity to share experiences, reflect on the data and take a close look at what's in these exams. Solutions to the 2020 and 2021 tech-active papers will be drawn on, with a focus on common questions and challenging aspects.

Alastair is a STEM teacher at Adelaide's STEM-iest new high school. His focus is the ways in which STEM teaching can best support students to succeed in senior secondary mathematics courses, with a special interest in the Mathematical Methods course. Alastair produces video resources as a way to simulate student learning, enhance their use of technology and support them in high stakes assessment tasks.

M^2 – the power of Middle school Maths. Steps to a successful and engaging junior secondary maths program.
Tania Russell (HOD Mathematics, Foxwell State Secondary College) (Junior secondary) (Disposition, Pedagogies, Curriculum)

Teachers love that light bulb moment, where the learning becomes visible! As Maths teachers we love those moments, particularly for those students who have struggled mathematically in the past. Often in the junior secondary years Maths is simply endured by many students, usually for those where Maths is not their natural forte. As a result, their sense of self as a successful learner diminishes. This session will detail how through having an effective real world based junior secondary Mathematics program, coupled with strong pedagogical approaches, will ensure all students can find a love of learning in Maths. The session will offer practical strategies on how to create deep thinkers in Maths that allows for the building of Mathematical resilience throughout the middle years, ensuring your students will never say again "Where will I ever use that in real life?"

Tania Russell is a passionate and enthusiastic Mathematics educator, who believes Maths should be an inclusive journey of enjoyment for all learners, and whose vision it is to challenge the "I am just not good at Maths" mindset of students, particularly in the junior secondary years. After a successful career, nationally and internationally as an Accountant, Tania wanted to share with future generations her passion for numbers, and how through inquiry led pedagogy and links to the real world, numbers can tell amazing stories. Tania has worked as a Maths teacher, numeracy co-ordinator, as well as the lead to introduce the New Pedagogies for Deep Learning into teaching and learning frameworks. Tania was awarded an Education QLD, M in STEM grant to conduct an action research project into how effective pedagogy can impact on the self-efficacy and learning dispositions of students in junior secondary Mathematics. Tania's love of learning sees her embarking in 2022 upon a Masters of Education, researching how inquiry led pedagogy can enable not only life long learners in Mathematics but as 21st century learners of the future. Tania is currently the Head of Department of Mathematics at Foxwell State Secondary College.

The 2 glass balls, summing series and arithmetic-geometric sequences and technology.
Brett Stephenson (HOD Guilford Young College) (Senior Secondary)(Curriculum)

This workshop will start with a low floor high ceiling task and then develop into the consideration of arithmetic-geometric sequences – why do one when you can do both at the same time! Some applications of these sequences will also be presented. Casio technology will be used to present but any technologies can be used.

Brett is currently the President of the Mathematical Association of Tasmania and the Tasmanian representative on the AAMT. He is the Head of the Mathematics Faculty at Guilford Young College (Year 11/12) and has been actively presenting workshops for over 15 years.