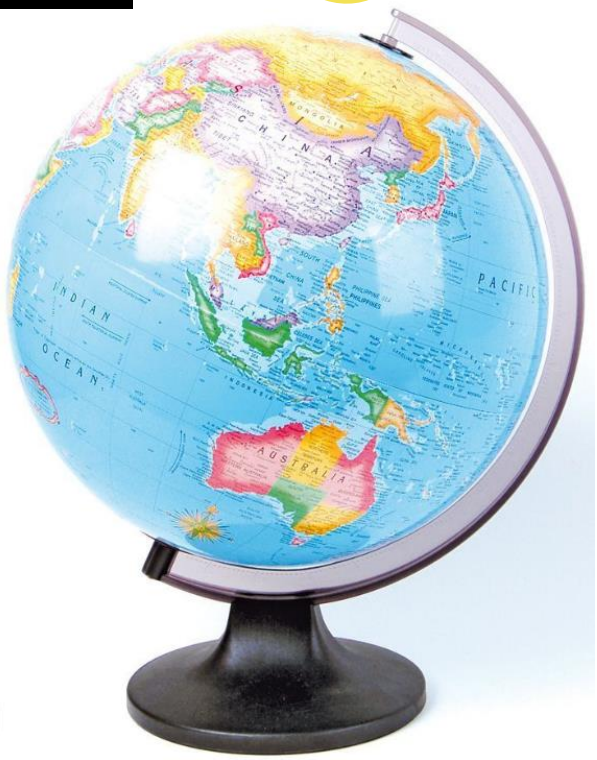
The Mathematical Association of South Australia Inc

MASA ANNUAL CONFERENCE 2023

'Mathematics in a changing world'



CONCORDIA COLLEGE
24 Winchester Street, Highgate

Thursday 20th & Friday 21st July

Edrolo

credit unionsa

EssentialAssessment™
Assessment and Curriculum made easy

CASIO EDUCATION

CAMBRIDGE UNIVERSITY PRESS

CONCORDIA COLLEGE

KUMON
MATHEMATICS ENGLISH

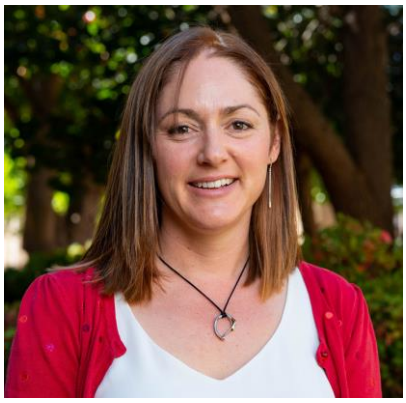
The Mathematical Association of South Australia Inc

Program

DAY 1	THURSDAY 20th JULY
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** – Edrolo / Aaron Pittaway Cambridge University Press / Sabika Cummins
9.10 am – 10.00 am	**The Carol Moule Keynote Address** / Bronwyn Hajek, University of South Australia
10.00 am – 10.30 am	**Conference Sponsors** – Credit Union / Peter Dinan **Morning Tea** / visit Trade Displays
10.30 am – 11.20 am	**Workshop 1**
11.30 am – 12.20 pm	**Workshop 2**
12.30 pm – 1.30 pm	**Lunch** / visit Trade Displays
1.40 pm – 2.30 pm	**Workshop 3**
2.45 pm – 3.45 pm	**Keynote 2** / Bonnie Hazelgrove, Bureau of Meteorology
4.00 pm – 5.00 pm	'Happy Hour' Sponsored by the 'Australian Taxation Office' & 'Mathspace' - nibbles & refreshments provided
5.30 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 21st JULY**
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** – Essential Assessment / Jacinta Browning
9.10 am – 10.00 am	**Keynote 3** / Dr Kate Quane, University of South Australia
10.00 am – 10.30 am	**Morning tea** / visit Trade Displays
10.30 am – 11.20 pm	**Workshop 4**
11.30 pm – 12.20 pm	**Workshop 5**
12.30 pm – 1.30 pm	**Lunch** / visit Trade Displays
1.40 pm – 2.30 pm	**Workshop 6**
2.45 pm - 3.45 pm	Panel of Speakers: Where is the Maths? 'Happy Hour' Sponsored by the 'Australian Taxation Office & 'Mathspace' - nibbles & refreshments provided
3.45 pm	**Close of Conference**

Keynote 1 - The Carol Moule Keynote Address - Thursday 20th July – Day 1

Bronwyn Hajek / University of South Australia



Bio: Bronwyn is an applied mathematician at the University of South Australia who loves working with others to solve problems. She uses differential equations to model various problems in biological invasions, cell biology, viscous flow, and physical chemistry, and has a particular focus on using specialised techniques to construct solutions to these differential equations. Together with her collaborators, she holds over $8m in research funding.

Bronwyn is an enthusiastic teacher of university mathematics, both to higher level mathematics students, and to students in other disciplines whose primary focus is not mathematics (and who may be math-phobic). In 2020 she was awarded UniSA STEM's Mid-Career Teacher Award.

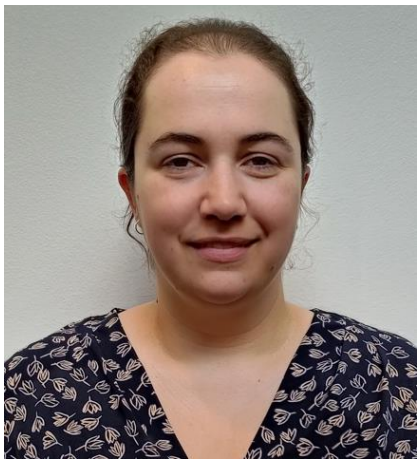
Title: What's maths like in the real world?

Abstract: In this session I'll describe some interesting "real world" problems and talk briefly about some of the mathematics used and its contribution to the understanding of the situation. Some real world applications I'll touch on include making better fibre optic cables, fertilisation of eggs, chemical signalling, math medicine, disease spread, and pattern formation in physical chemistry.

When doing mathematics "in the real world", there are no instructions or hints about the kind of mathematical techniques that might be useful. Sometimes you're not even sure if there's a solution at all! I'll also talk about some of the ways that we incorporate this kind of experience into our maths degree.

Keynote 2 - Thursday 20th July – Day 1

Bonnie Hazelgrove / Bureau of Meteorology



Bio: After completing a Bachelor of Mathematical and Computer Sciences with Honours and a Graduate Diploma in Education, Bonnie had a brief stint as a high school mathematics teacher before joining the Bureau of Meteorology in 2014 where she gained a Graduate Diploma in Meteorology. She has spent most of her career as an operational weather forecaster, delivering services for the public, aviation customers, and Emergency Services. Bonnie recently joined the Bureau's Training Centre, conducting training and competency assessments for forecasters, working on the implementation of the Australian Fire Danger Ratings System, and helping manage and deliver the Bureau's Introduction to Meteorology courses.

Title: The Mathematics of Weather

Abstract: Mathematics defines the fundamental equations which describe the behaviour of our atmosphere, playing a vital role in predicting the weather that touches on the lives of Australians every day. Mathematics is also at the core of our understanding of the past, present, and future of weather in our world; we use it to describe our climate, to analyse current weather observations, and to predict how our climate will change in the future. This presentation will discuss some examples of mathematical applications in meteorology and climatology, and potential links they have to the Australian Curriculum.

Keynote 3 - Friday 21st July – Day 2

Dr Kate Quane / University of South Australia

Bio: Dr Kate Quane is a lecturer and researcher in mathematics education at the University of South Australia: Education Futures. Building on a teaching career including school leadership roles, curriculum advisor to the Queensland Curriculum Assessment Authority (QCAA), textbook contributor, and Questacon Maths Centre coordinator, Kate now teaches mathematics education to primary pre-service teachers. Kate's research is focused on the affective domain, in particular, students' and teachers' attitudes towards mathematics, how attitudes are enacted, develop, and change over time, and the factors that influence attitudes. Kate also researches issues surrounding equity in mathematics education, investigating the experiences of teachers and students in small schools and how students who are Hard of Hearing or d/Deaf communicate and engage in mathematics.

Title: Mathematics in a changing world: Exploring what it means to communicate mathematical thinking.

Abstract: The theme of this conference is "Mathematics in a changing world" and in terms of mathematics education, we are faced with changing educational practices, changing pedagogical approaches, changing society, changing learning environments, changing systems, changing technology, and changing curricula, just to name a few monumental changes. In this keynote, I will briefly explore some of these changes, posing questions along the way for participants to ponder. The presentation will then take a closer examination of the changes in relation to contemporary mathematics education practices by exploring what it means to communicate mathematical thinking to others. Most importantly, the keynote will explore types of mathematical thinking, processes involved in communicating mathematical thinking so that it is visible to others, and the methods used to communicate mathematical thinking.

DAY 1	Thursday 20th 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 - Edrolo / Aaron Pittaway Cambridge University Press / Sabika Cummins
9.10 am – 10.00 am	The Carol Moule Keynote Address 1 Bronwyn Hajek / University of South Australia
10.00 am – 10.30 am	Conference Sponsors – Credit Union / Peter Dinan Morning Tea / visit Trade Displays

10.30 am – 11.20 pm Workshop 1 –

Session	Presenter and Title	Yr levels	Room
1.1	**Peter Fox – Texas Instruments** How to make your calculator wireless for less than $30.00	7 - 12	
1.2	**Tierney Kennedy – Kennedy Press** Developing a balanced teaching cycle	All	
1.3	**Barry Kissane – Murdoch University, WA** Learning about rational and irrational numbers with changing scientific calculators	6 - 10	

1.4	**Rebecca Marrone, Vitomir Kovanovic, Dr Srecko Joksimovic, Florence Gabriel & Sam Fowler – University of South Australia, Centre for Change and Complexity in Learning** Fostering Student Success through AI and Learning Analytics in Mathematics Education	All	
1.5	**Michelle McLeod – RiAus (The Royal Institution of Australia) & MASA** Investigating how mathematics changes the world – establishing an investigation community (Senior Years)	10 - 12	
1.6	**Jo Princi – Blackwood High School** Learning Sprints to Spark Active Learning	7 - 12	
1.8	**Deb Woodard-Knight & Valerie Frost – Walford Anglican School for Girls' & King's Baptist Grammar School** Q & A for Stage 2 Specialist Mathematics	12	

11.30 am – 12.20 pm Workshop 2 –

Session	Presenter and title	Yr levels	Room
2.1	**Dr David Butler – University of Adelaide** Stick Figure Data	8 - 12	
2.2	**Sam Capurso & Sharon Kennare – Blackfriars Priory School & MASA** Introduction to Excel and the ACARA V9.0 requirements	7 - 12	
2.3	**Jo Kellaway & Dr Neil Davis – Australian Science and Mathematics School & MASA** Getting Started with JSMEP Junior Secondary Mathematics Enrichment Project / SAMTQ South Australian Mathematics Talent Quest Competitions	R - 12	
2.4	**Kathy Lin – Edrolo** Using non-examples to boost student's Maths achievement	Junior / Secondary	
2.5	**Alastair Lupton – Adelaide Botanic High School** Who cares about scientific calculators?	7 - 9	
2.6	**John Rowe – Desmos Classroom** Hook, Line and Sinker	All	
2.7	**Reeta Sidhu – Australian Taxation Office** Free resources to support teachers in delivering the new Australian Curriculum	All	
2.8	**Dr Hayden Tronnolone – Flinders University** Adventures in Polynomials	10 - 12	

12.30 pm – 1.30 pm – Lunch – visit Trade Displays

1.40 pm – 2.30 pm Workshop 3 –

Session	Presenter and title	Yr levels	Room
3.1	**John Absolon & Dr Nick Jackson – Christian Brothers College & Scotch College** AI in learning and assessment, move over ChatGPT	7 - 12	
3.2	**Daniel O'Kane & Jo Moylan – Mathspace** Implementing digital tools in the South Australian mathematics classroom	3 - 10	
3.3	**Rebecca Garrett – Trinity College** Mathematics in Action: Tasks to encourage thinking	5 - 11	
3.4	**Anthony Harradine – Prince Alfred College** 1984 – 2023	All	
3.5	**Tierney Kennedy – Kennedy Press** Developing maths concepts with receipt roll and number lines	7 - 12	
3.6	**Alastair Lupton – Adelaide Botanic High School** All there is to know about using a CG50 in a Methods exam?	12	
3.7	**John Rowe – Desmos Classroom** Desmos, Desmos, Desmos	All	
3.8	**Dr Rebecca Vivian & Dr John West - The University of Adelaide** Maths in Schools: Teaching and Learning Resources to Support Mathematics – then 5.10 Dr John West will deep dive into the free online course content	K - 10	

2.45 pm – 3.45 pm - Keynote 2 / Bonnie Hazelgrove, Bureau of Meteorology

4.00 pm – 5.00 pm - Happy Hour & Raffle Prize Draw / sponsored by

Australian Government
Australian Taxation Office

mathspace

Conference Dinner / 5.30pm for 6pm - Earl of Leicester Hotel

DAY 2	Friday 21st 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 - Essential Assessment / Jacinta Browning
9:10 am – 10:00 am	Keynote Address 3 – Dr Kate Quane / University of South Australia
10.00 am – 10.30 am	Morning Tea / visit Trade Displays

10.30 am – 11.20 pm Workshop 4 –

Session	Presenter and title	Yr levels	Room
4.1	**Dr David Butler – The University of Adelaide** Summing up somewhere in the middle	All	
4.2	**Nicholas Cooper – Seymour College** Stage 2 Methods for Graduate and Early Career Teachers	12	
4.3	**Sabika Cummins – Cambridge Press** New Resources for the Australian Curriculum v 9.0	7 - 10	
4.4	**Rebecca Garrett – Trinity College** SHARE TO INSPIRE: Engaging Maths Activities and Resources	R - 11	
4.5	**Masa Book Club – Jarrad Strain** A metaphorical fugue on minds and machines in the spirit of Lewis Carroll		
4.6	**Michelle McLeod – RiAus (The Royal Institution of Australia)** Changing the world with STEM – How does mathematics change our world?	4 - 12	
4.7	**Daniel Rabbett – Cardijn College** Deconstruct – Open ended Maths Problems	9 - 12	
4.8	**Jane Watson – Nazareth College** Making Maths Visual: Counting with Your Eyes	R - 2	
4.9	**Maryanne Rischmueller – Surrey Downs Primary** Multiplicative Thinking	2 - 9	
4.10	**Steven Begg – University of Adelaide and Decisions, Decisions** Experience teaching 11-13 year olds a generic, formal, decision-making methodology	8 - 12	

11.30 pm – 12.20 pm Workshop 5

Session	Presenter and title	Yr levels	Room
5.1	**Timothy Bond – Loreto College** Digital pedagogy for statistics: using CODAP	7 - 10	
5.2	**Peter Fox – Texas Instruments** More students choosing maths and better results – is it really possible?	7 - 12	
5.3	**Anthony Harradine – Prince Alfred College** Come and battle	All	
5.4	**Tierney Kennedy – Kennedy Press** Why kids don't get division and how to fix it for years 2-8	2 - 8	

5.5	**Ana Marques Britto & Danielle Martin – Playford International High School** Mathematics in the Wildlife Centre	7 - 11	
5.6	**Jacinta Browning & Jacqueline Clark – Essential Assessment** "Knowing and Growing students even when the Curriculum Changes!"	R - 10	
5.7	**Dr Kate Quane – University of South Australia** Teaching and Learning Mathematics in multiyear classes	R - 12	
5.8	**Brett Stephenson – Guilford Young College** Investigations and Regression with scientific calculator	7 - 10	
5.9	**Bruce White – University of South Australia** Activities to develop mathematical reasoning	R – 6	
5.10	**Dr John West – University of Adelaide** At last … the Mathematics Hub is Live!	K - 10	

12.30 pm – 1.30 pm – Lunch – visit Trade Displays

1.40 pm – 2.30 pm Workshop 6

Session	Presenter and title	Yr levels	Room
6.1	**Dr David Butler – The University of Adelaide** 65536	5 - 12	
6.2	**Sam Capurso & Sharon Kennare – Blackfriars Priory School & MASA** Introduction to Excel and the ACARA v 9.0 requirements	1 - 6	
6.3	**Tierney Kennedy – Kennedy Press** Introducing modelling from years 3-9	3 - 9	
6.4	**Barry Kissane – Murdoch University, WA** Exploring functions and tables with changing scientific calculators	7 - 10	
6.5	**Michelle McLeod – RiAus (The Royal Institution of Australia) & MASA** Investigating how mathematics changes the world – establishing an investigation community (Upper Primary & Middle Years)	4 - 10	
6.6	**Dr Kate Quane & Helen Booth – University of South Australia** Unpacking Mathematical thinking: What does is mean to describe and explain	R - 13	
6.7	**Bec Wouters – Ocean View College** Re-engaging Stage 1 students with low numeracy	10 - 12	
6.8	**Katie Piper – Education Perfect** 'EP Online Assessments: Free up your time to focus on the important stuff!'	5 - 9	
6.9	**Maryanne Rischmueller – Surrey Downs Primary** Fractions	2 - 9	

2.45 pm – 3.45 pm - Panel of Speakers: Where is the Maths?

'Happy Hour' Sponsored by the 'Australian Taxation Office & 'Mathspace'

nibbles & refreshments provided

Australian Government
Australian Taxation Office

mathspace

NAME and ABSTRACT	Workshop	Years
John Absolon & Dr Nick Jackson – Christian Brother's College & Scotch College AI in learning and assessment, move over ChatGPT We all delve into how teachers and students may engage with AI in the classroom, whether it be for teachers and lesson planning, resource, creation, or assessment writing. We will explore AI software, of which ChatGPT is just one of thousands. We will explore different ways to keep up with innovation in the AI space, as well as air some ethical considerations in particular student assessments and AI use and school response.	**3.1**	**7 - 12**
Emeritus Professor Steve Begg – The University of Adelaide & DecisionsDecisions (Company) Experience teaching 11-13 year olds a generic, formal, decision-making methodology : Our decisions are the only influence we have on how our lives turn out (the rest being up to chance, nature, other people decisions…). Yet most people have not been taught how to make good decisions. This presentation provides strong evidence that 11-13 year olds are capable of learning how to do so during 2 x 3.5 hr workshops, to a level beyond most adults!	**4.10**	**R-12**
Timothy Bond – Loreto College Digital pedagogy for statistics: using CODAP Do we teach statistics for computation or interpretation? Interpretation is arguably the more important skill, but the typical textbook focuses on computation. Digital tools, like CODAP, can help students explore both the computational and interpretational aspects of statistics learning. This workshop will include an introduction to CODAP and its features that support student learning in statistics.	**5.1**	**7 - 10**
Jacinta Browning & Jacqueline Clark – Essential Assessment 'Knowing and Growing students even when the Curriculum Changes!" This presentation will introduce our assessment model aligned to the current **new V9 P-10 Australian Mathematic Curriculum**, which supports teachers to make data-informed decisions. Our differentiated Numeracy assessment and curriculum model, 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 identity a learning pathway to foster student growth, engagement as well as mapping of students to the new Version 3 National Numeracy Progressions.	**5.6**	**R - 10**
Dr David Butler – University of Adelaide 65536 My favourite whole number is 65536. In this session, you'll get to play with the cool maths ideas behind why.	**6.1**	**5 - 12**
Dr David Butler – University of Adelaide Summing up somewhere in the middle Your students don't have to get to the end of a problem or an activity to learn something useful. In this session, you will discuss the benefits of helping students sum up their learning somewhere in the middle and have a chance to practise.	**4.1**	**All**
Dr David Butler – University of Adelaide Stick Figure Data This session is a chance to play with the Stick Figure Data cards that I have designed especially for investigation relationships between different kinds of variables, as well as discuss how you might see them in your own classroom.	**2.1**	**8 – 12**
Sam Capurso & Sharon Kennare Blackfriars Priory School & MASA Introduction to Excel and the ACARA v 9.0 requirements Connecting the ACARA v 9.0 requirements and the use of spreadsheets / technology in the classroom. Looking at data entry, statistics and presentation.	**2.2**	**7 - 12**

Sam Capurso & Sharon Kennare Blackfriars Priory School & MASA Introduction to Excel and the ACARA v 9.0 requirements Connecting the ACARA v 9.0 requirements and the use of spreadsheets / technology in the classroom. Looking at data entry, statistics and presentation.	**6.2**	**3 - 6**
Nicholas Cooper – Seymour College Stage 2 Methods for Graduate and Early Career Teachers Presentation and discussion on teaching Stage 2 Mathematical Methods for the first or second time with a key focus on curriculum and assessment. Key resources will be presented and discussed, including programs, SAT questions and folios.	**4.2**	**12 Graduate & Early Career Teachers**
Sabika Cummins – Cambridge University Press New Resources for the Australian Curriculum v 9.0 The Essential Mathematics series is renowned for its authoritative interpretation of the Australian Curriculum. Cambridge Education Resource Consultant, Sabika Cummins, will present the fourth edition of Essential Mathematics and highlight how new content is introduced to encourage deep understanding. She will illustrate new features such as technology and computational thinking activities in every chapter, targeted skill sheets, and editable lesson summaries for classroom presentation. A brief introduction to the new diagnostic tool available with this series will be discussed with the opportunity to sign up for a more detailed demonstration in Term 3.	**4.3**	**7 - 10**
Peter Fox – Texas Instruments More students choosing maths and better results – is it really possible? Would students really choose to do more mathematics? An outer suburban school in a relatively low socio-economic area grew it's Specialist mathematics cohort from 7 students to 25 and significantly improving results at the same time. A school in another state was independently doing the same with similar results. Participants in this session will see how this can be done through an active lens.	**5.2**	**7 - 12**
Peter Fox – Texas Instruments How to make your calculator wireless for less than $30 What can you do with a wireless graphing calculator? Aside from a range of interactive games, there are lots of other amazing opportunities. You can turn your graphing calculators into a super cheap voting response system, providing a very convenient and affordable way to do some formative assessment. You can create some amazing simulations or even fly a drone, come along and have some fun.	**1.1**	**7 - 12**
Rebecca Garrett – Trinity College Mathematics in Action: Tasks to encourage thinking This workshop will get attendees to join a thinking classroom where they will work in groups to solve problems. Practices from Peter Liljedahl's book, "Building Thinking Classrooms in Mathematics, Grades K-12" will be utilised. Many of the 14 practices in the book will be modelled in the workshop. Two activities will be covered; 'Sweet Algebra' and 'Sum and Product Squares'. Tips and strategies on how to implement these activities in the classroom will be shared. Attendees will leave with the resources to trial these activities in their own classrooms.	**3.3**	**5 - 11**
Rebecca Garrett – Trinity College SHARE TO INSPIRE: Engaging Maths Activities and Resources These days the mathematics resources available are abundant, but having the time to wade through them to find the gold takes time. This workshop will provide attendees with an opportunity to share their favourite engaging mathematics activities with the group. Attendees will be able to share and offer advice on how they have successfully implemented the activity in their classroom. This relaxed environment will provide opportunity to ask questions and learn from each other. A summary of all the activities will be shared after the session. If attendees need printing completed before the session, please contact the MASA Office. This workshop is a great starting point for teachers who are considering Highly Accomplished or Lead Teacher certification as it will provide you with an opportunity to share your expertise with the group.	**4.4**	**R - 11**

Anthony Harradine – Prince Alfred College Come and battle A long time dream has been to find a way to allow an audience to see mathematics performed/played. Something like a footy match, where parents stand on the sidelines and revel their children's efforts, whether they fight hard in a scrimmage, go down in a tackle, handball to the opposition under pressure or kick a goal. This year we have trialed a number of small casual events called Maths Battles. They have proven to be very popular with the nippers and naturally elicit a lot of behaviours that we want to develop in our students. So far, we have had no spectators, just two or three teams of kids and the judge! If you are keen to join a team in this session, we will run a wee-battle so you get the idea, and have some pleasure in the process. Who knows, there might be a league in the near future … ☺	**5.3**	**All**
Anthony Harradine – Prince Alfred College 1984 - 2023 If you are creating the now and pondering the future, it might help to understand the past. During this talk we will describe the main agendas in mathematics education since 1984, discuss the proponents of these agendas and what drove them, and consider what long term effect they have had. Having recently re-started as a Head of Mathematics, after 20 years on the bench, I have reflected a lot on the past 39.5 years in order to help create the now, which will hopefully blossom into a positive future.	**3.4**	**All**
Jo Kellaway & Dr Neil Davis – Australian Science and Mathematics School & MASA Getting Started with JSMEP Junior Secondary Mathematics Enrichment Project / SAMTQ South Australian Mathematics Talent Quest Competitions MASA in conjunction with DfE is offering students in Years R to 12 the opportunity to be involved in a new Junior Secondary Mathematics Enrichment Project. This project is designed to align with the DfE implementation of the Australian Curriculum and with the goals and challenges of the B-18 Numeracy and Literacy Strategy: **Great Start - Strong Foundations - Powerful Learners**, focusing on building the learning power of students by increasing their ability to use high-level thinking skills and apply what they have learned in new and increasingly complex situations.	**2.3**	**R - 12**
Tierney Kennedy – Kennedy Press Developing a balanced teaching cycle The current "maths wars" debate depicts problem-based and explicit teaching approaches as incompatible, whereas in reality most teachers use a mix of both. In this workshop, you will have the opportunity to explore a balanced teaching-learning cycle that led to a 75% improvement in PAT M growth rates across three primary schools from 2018-2021. The cycle includes experimental problem-solving, explicit teaching of strategies, generalising principles and interleaved practise as well as building in time for responsive teaching.	**1.2**	**All**
Tierney Kennedy – Kennedy Press Introducing modelling from years 3 - 9 Modelling is included in the AC9.0 achievement standards for students in year 3 and onwards, but what does this really mean and how do we do it well? In this highly-practical workshop teachers will use recent news articles as a stimulus to design an age-appropriate and real-world modelling task for their own class.	**6.3**	**3 - 9**
Tierney Kennedy – Kennedy Press Why kids don't get division and how to fix it for years 2-8 Division is more than simply the inverse of multiplication - it connects fractions, decimals, percentage and measurement and forms a key element for connecting number laws with algebraic reasoning. Developing the structural thinking underpinning division can be a turning point for many kids in truly understanding maths. This workshop will provide a developmental sequence of stages for division as well as providing practical teaching ideas to address gaps at each stage.	**5.4**	**2 - 8**

Tierney Kennedy – Kennedy Press Developing maths concepts with receipt roll and number lines Limiting the cognitive load on kids taking Essential Maths is really important. In this workshop, Tierney will explore how to use receipt-roll to develop a strong understanding of number lines. Teachers need to come with a pen and be prepared to physically make number lines from receipt-roll for: Measurement: length (including perimeter), capacity and unit conversion, Conversion between fractions, decimals and percentage, Probability, Understanding integers, Pie charts and bar graphs, Ratio and scales, Multi-step worded problems and simple algebraic equations (similar to the bar method), Latitude, longitude, time zones and angles.	**3.5**	**7 - 12**
Barry Kissane – Murdoch University, WA Learning about rational and irrational numbers with changing scientific calculators Although rational and irrational numbers are key elements of the Number strand of the Australian Curriculum: Mathematics, little guidance is offered in the official documents or in most textbooks on the place of calculators to support the associated learning. This workshop explores some opportunities presented by modern scientific calculators, highlighting incidentally the frequent misunderstanding of calculators as devices mostly of value for computation.	**1.3**	**6 - 10**
Barry Kissane – Murdoch University, WA Exploring functions and tables with changing scientific calculators The educational value of calculators derives from the experiences they offer students, not merely from their capacity to generate numerical answers, even though naïve interpretations of the word 'calculator' as a device restricted to 'calculation' continue to be widespread, especially in the early secondary school years. Following a model for the educational use of calculators, this workshop explores several ways in which the use of new calculator facilities to define functions and construct tables of values for them can begin to be productively used in the secondary school.	**6.4**	**7 - 10**
Jarrad Strain – Masa Book Club A metaphorical fugue on minds and machines in the spirit of Lewis Carroll Douglas Hofstadter's book is concerned directly with the nature of "maps" or links between formal systems. However, according to Hofstadter, the formal system that underlies all mental activity transcends the system that supports it. If life can grow out of the formal chemical substrate of the cell, if consciousness can emerge out of a formal system of firing neurons, then so too will computers attain human intelligence. Godel, Escher, Bach is a wonderful exploration of fascinating ideas at the heart of cognitive science: meaning, reduction, recursion, and much more.	**4.5**	**All**
Kathy Lin – Edrolo Using non-examples to boost students' Maths achievement This session aims to equip Maths teachers with the skills and knowledge to effectively use non-examples as a teaching strategy in their classrooms. Non-examples are examples of what something is not, and they are an effective tool for developing a deeper understanding of mathematical concepts. During the session, we will explore the benefits of using non-examples, look at different types of non-examples (including misconceptions), and examine how to integrate them into lessons to help students understand and apply mathematical concepts. Teachers do not need to be using Edrolo to get practical, ready-to-go ideas and resources for their Maths classes.	**2.4**	**Junior** **Secondary**
Alastair Lupton – Adelaide Botanic High School Who cares about scientific calculators? Once upon a time, scientific calculators were a big deal, back in the day … but, with the explosion of other electronic technology in the mathematics classrooms, including graphing calculators, laptops and tablets accessing powerful online apps, are they still relevant? Does it matter what calculative tool(s) our students in the middle years get their hands on? Does it matter how number is represented? How algebra is first interacted with? Statistical calculations performed? Should this use be planned, and what happens if it is not? These questions will be discussed and stock will be taken of the technology options in the middle schools and the Essential Maths classrooms of 2023.	**2.5**	**7 - 9**

Alastair Lupton – Adelaide Botanic High School All there is to know about using a CG50 in a Methods exam? Is it possible to know 'all there is to know' about using a Casio CG50AU graphics calculator in SACE Mathematical Methods examinations? In an attempt to answer this question, participants will be taken on a walk-through of relevant apps (Run-Matrix, Graph, Statistics and Equation), looking at a range of commonly and less commonly used functionality. We will also take a look at video resources available to support teachers and students to use this powerful technology, in particular a "how to" library and video solutions to the last two final exams. This workshop would suit teachers new to this form of technology or its use in the Year 12 Methods course.	**3.6**	**12**
Ana Marques Britto & Danielle Martin – Playford International High School Mathematics in the Wildlife Centre Students participate with numeracy development as they work with and learn about animals in the Wildlife Centre. Through theme-based learning, students are engaged and motivated to apply a variety of mathematical skills to solve authentic real-world problems.	**5.5**	**7 - 11**
Rebecca Marrone, Vitomir Kovanovic, Dr Srecko Joksimovic, Florence Gabriel & Sam Fowler - University of South Australia, Centre for Change and Complexity in Learning Fostering Student Success through AI and Learning Analytics in Mathematics Education Over the past few years, Artificial Intelligence (AI) and Learning Analytics have become increasingly popular topics of discussion in the field of education. These technologies present exciting possibilities for enhancing student learning outcomes, especially in terms of competency development. They aim to ensure that every child possesses the necessary skills to succeed in the future. In this workshop, we will delve into how AI and data analytics can support student growth in mathematics. Additionally, we will also consider the ethical implications of using AI and data analytics in education, particularly regarding equity, bias and privacy. Lastly, we will examine the challenges and limitations of these technologies and explore ways to incorporate the student voice to further support their learning and mathematical development.	**1.4**	**All**
Michelle McLeod – RiAus (The Royal Institution of Australia) & MASA Investigating how mathematics changes the world – establishing an investigation community (Primary & Middle Years) Looking to expand your collection of mathematical investigations? Have an investigation resource that you are willing to share? Eager to connect with colleagues to support the development of new ideas and build content connected with mathematical applications across STEM fields? MASA is aiming to create 'Investigation Resource Banks' and would like to establish an ongoing community of educators willing to facilitate the process and collaboratively support each other. Experienced, pre-service, early career and out-of-scope teachers from across upper primary and the middle years (Yr 7 -10) are welcome. Join us at this session to review resources, trial ideas and participate in the conversation. Please Note – A separate session will be held for senior years.	**6.5**	**4 - 10**
Michelle McLeod – RiAus The Royal Institution of Australia & MASA Investigating how mathematics changes the world – establishing an investigation community (Senior Years) Looking to expand your collection of mathematical investigations? Have an investigation resource that you are willing to share? Eager to connect with colleagues to support the development of new ideas and build content connected with mathematical applications across STEM fields? MASA is aiming to create 'Investigation Resource Banks' and would like to establish an ongoing community of educators willing to facilitate the process and collaboratively support each other. Experienced, pre-service, early career and out-of-scope teachers from across senior subjects and year levels (Yr 10 - 12) are welcome. Join us at this session to review resources, trial ideas and participate in the conversation. Please Note – A separate session will be held for upper primary and middle years.	**1.5**	**10 - 12**

Michelle McLeod – RiAus (The Royal Institution of Australia) Changing the world with STEM – How does mathematics change our world? Interested in connecting your classroom with current and emerging STEM research? Looking to utilise resources and activities that incorporate mathematical applications across STEM fields? Keen to inspire your students by emphasising the M in STEM? Come along to learn about the resources available through The Royal Institution of Australia's (RiAus) STEM Education Platform. Utilising content from Cosmos Magazine, and a range of partnerships including the Australian Antarctic Division, the Minderoo Flourishing Oceans project, and other Australian institutions, our resources showcase emerging STEM applications, provide hands-on activities, and conceptualise links between research and curriculum. Join this session to review available resources, suggest new ideas, explore research examples, network with colleagues, and trial activities.	**4.6**	**4 - 12**
Daniel O'Kane & Jo Moylan – Mathspace Implementing digital tools in the South Australian mathematics classroom Join us as a secondary mathematics teacher from an Adelaide school (to be announced) shares how they use digital tools such as Mathspace for teaching & learning mathematics. This is the perfect opportunity to learn from an experienced digital educator. Craig Blake from Mathspace will be present, to introduce Mathspace as well as our new Year 7-10 Mathspace print textbooks that align to the new Australian Curriculum v9.0.	**3.2**	**3 - 10**
Katie Piper – Education Perfect 'EP Online Assessments: Free up your time to focus on the important stuff!' This presentation will showcase the Assessment side of Education Perfect. Use existing Diagnostics, Topic Tests or practice NAPLAN content to generate detailed feedback reports for both students and teachers. The system will automatically generate an individualised learning pathways for each student or teachers can release recommendations by topic in line their explicit teaching. Create your own content or digitise existing resources and make use of the automatic marking component to reduce your marking time, plus use the dynamic variables to generate infinite practice questions for your students!	**6.8**	**5 - 9**
Jo Princi – Blackwood High School Learning Sprints to Spark Active Learning Embedding a range of learning strategies through "learning sprints" conducted at our site to help foster self regulated students. In this workshop I will share how I model the strategies in my classes, help students build on a connected body of knowledge through task design and unit planning, present a collection of student artifacts and student feedback on the use of strategies as well as initial data analysis to determine level of impact.	**1.6**	**7 – 12**
Dr Kate QUANE – University of South Australia Teaching and Learning Mathematics in multiyear classes Do you work in a small school or with students in a multiyear class? This workshop will share recent research about the teaching and learning of mathematics in small schools. The workshop will also provide the opportunity to create challenging thinking tasks suitable to use with multide year levels.	**5.7**	**R - 12**
Dr Kate QUANE & Helen BOOTH – University of South Australia Unpacking Mathematical thinking: What does it mean to describe and explain Mathematical thinking is often described as 'messy' and 'difficult'. Two key processes of mathematical thinking are describing and explaining. In this workshop, we explore the differences between describing and explaining across year levels, giving practical examples from the Australian Mathematics Curriculum.	**6.6**	**R - 13**
Daniel Rabbett – Cardijn College Deconstruct - Open ended Maths Problems I will go through some examples of 'open ended' problems I have given in my classroom, which participants will engage with. They will then create their own 'open ended problems' about specific topics in groups.	**4.7**	**9 - 12**

Maryanne Rischmueller – Surrey Downs Primary School Multiplicative Thinking What is multiplicative thinking and why is it important? What is the sequence of learning to become a multiplicative thinker? When do we begin? We will explore answers to these questions at this hands-on workshop, as we play at different activities and then develop our sequence of the concepts. This will give us a better understanding of how to move each student forward in this vital area of mathematics. I will be drawing from the research of Dr Dianne Siemon, RMIT University, Melbourne.	**4.9**	**2 - 9**
Maryanne Rischmueller – Surrey Downs Primary School Fractions Fractions can be one of the perplexing topics for many students. In this workshop we will explore a cycle of teaching a fraction concept, beginning with a real world activity to engage, then whole body activities and those using manipulatives (today playing with Cuisenaire rods), moving to a visual representation (bar model) before doing abstract problems with numbers. We finish by applying the learning to everyday problems. Discussions will revolve around why and when we might take students through the entire sequence.	**6.9**	**2 - 9**
John Rowe – Desmos Classroom Hook, Line & Sinker Engaging students is the first part of the complex puzzle in teaching. Once you've hooked them, then what? Experience a sequence of learning with John Rowe as he unpacks the key ideas in the Hook Line Sinker framework, why rich tasks are the norm not a novelty, and how practice can be rethought to consolidate learning in a more meaningful way.	**2.6**	**All**
John Rowe – Desmos Classroom Desmos, Desmos, Desmos Step inside the Desmos classroom with John Rowe. Experience a lesson as a student and gain insight into some key teacher moves that enhance student learning and promote deeper learning. Learn how to (and how not to) facilitate lessons that increase student thinking and promote meaningful discussions.	**3.7**	**All**
Reeta Sidhu – Australian Taxation Office Free resources to support teachers in delivering the new Australian Curriculum The ATO has developed new teaching resources that is aligned and fully mapped to the new Australian Curriculum. In this session, we will explore these resources and how it can be used in the classroom.	**2.7**	**All**
Brett Stephenson – Guilford Young College Investigations and Regression with scientific calculator This workshop will look at several investigations that can be value-added by using the CASIO fx-8200 AU scientific calculator (although any device can be used) to assist with calculations and to determine the regression of the data.	**5.8**	
Dr Hayden Tronnolone – Flinders University The Adventures in Polynomials Polynomials are fundamental across the curriculum but can get lost amongst the algorithms and applications. Let's get together and just play with some less common results. I'll bring my favourites for us to explore, and you can bring your own, so we all come away with a greater appreciation of these functions.	**2.8**	**10 – 12**
Dr Rebecca Vivian & Dr John West – The University of Adelaide Maths in Schools: Teaching and Learning Resources to Support Mathematics - This presentation introduces the Maths in Schools project which is an initiative funded by the Australian Government Department of Education delivered by Education Services Australia (ESA) in partnership with the University of Adelaide (UoA). This presentation introduces the Maths in Schools Professional Learning program delivered by UoA, including free online courses, training events, and professional learning packs. The program aims to build confidence and positive mindsets in maths, founded on evidence-based research and pedagogy, and harnessing the many high-quality	**3.8**	**K - 10**

resources and programs found on ESA's Mathematics Hub. This presentation is particularly targeted at school and curriculum leaders as well as interested individual teachers including preservice and teachers who are out of field. Then 5.10 Dr John West will deep dive into the free online course content.		
Jane Watson – Nazareth Catholic College Making Maths Visual: Counting with Your Eyes This workshop aims to enhance junior primary teachers' understanding of perceptual and conceptual subitising and provide practical strategies and resources to develop these skills in their students. This workshop will combine theoretical knowledge with interactive activities, fostering a deeper understanding of subitising and its significance in early mathematical development. The workshop is suitable for R-2 teachers with a particular focus on Early Career Teachers or those teachers not yet familiar with how to include subitising activities in a junior primary classroom.	**4.8**	**Junior Primary**
Dr John West – University of Adelaide At last … the Mathematics Hub is Live! In this workshop, I will provide an overview of the work that has led up to the launch of the Mathematics Hub and Maths in Schools project. You will leave with an understanding of the educational philosophy behind the resources and their development, including the CRA approach, how to access the resources and how to get the most out of them in the classroom.	**5.10**	**K - 10**
Bruce White – University of South Australia Activities to develop mathematical reasoning Reasoning in mathematics has an increased focus in the Australian Curriculum: Mathematics. This workshop will look at how the Australian Curriculum: Mathematics describes reasoning and look at activities that can be used to scaffold students in their development of mathematical reasoning.	**5.9**	**R - 6**
Deb Woodard-Knight & Valerie Frost – Walford Anglican School for Girls' & King's Baptist Grammar School Q and A for Stage 2 Specialist Mathematics Question and Answer session addressing any questions around Stage 2 Specialist Mathematics curriculum content and depth required, moderation, examination preparation, test writing and folio suitability and so on. Bring along any tests or folios to get feedback. Any questions welcome and preferably bring along e-copy so we can show everyone what is being discussed.	**1.8**	**12**
Bec Wouters – Ocean View College Re-engaging Stage 1 students with low numeracy Completing the compulsory Stage 1 numeracy credit can be a challenge for students with low numeracy. Throw in low attendance, complex student backgrounds or students absent due to an external course (eg VET) and achieving this credit seems almost impossible. Ocean View College has developed and run an authentic Stage 1 program that tackles some of these challenges and supports students to achieve their SACE. We want to share this program with you.	**6.7**	**10 - 12**

ANNUAL CONFERENCE 2023

'Mathematics in a changing world'

The Mathematical Association of South Australia Inc

Thank you to our Sponsors / Trade Displays

GOLD SPONSORS

Edrolo

credit unionsa

CAMBRIDGE UNIVERSITY PRESS

CASIO EDUCATION

EssentialAssessment™
Assessment and Curriculum made easy

KUMON
MATHEMATICS ENGLISH

SILVER SPONSORS

Australian Government
Australian Taxation Office

mathspace

BRONZE SPONSORS

OXFORD UNIVERSITY PRESS

EDUCATION
Always question, always wonder

Flinders UNIVERSITY

MANGAHIGH

TRADE DISPLAY

SGB ST GEORGES BOOKS
PROUDLY SOUTH AUSTRALIAN

TEXAS INSTRUMENTS

Trial Examinations
Original Exams
written by teachers

TE

ep Education Perfect

Dr John West
MATHEMATICS EDUCATION CONSULTANT

Haese Mathematics