	Session 1 – 10am	Session 2 – 11:20am	Session 3 – 12:10pm	Session 4 – 2pm
KEY: EC = Early Childhood, P = Primary, S = Secondary, SS = Senior Secondary, G = General, * = some commercial elements. **All sessions go for 50 minutes.**				
A	Derek Holton (G)	reSolve – T Popowski, S Thornton & K Tripet (P, S)	Louise Hodgson (G)	reSolve – T Popowski, S Thornton & K Tripet (G)
R1	Birsin Reynolds (EC, P)	Richard Korbosky (EC, P)*	Aimee Woodward (G)	Tempest – Ann Ruckert (G)
R2	Sue Dishington (S)	K Rudolf & M MacGregor (G)	Tempest - Ann Ruckert (G)	Repeat: Greg Oates (G)
R3	Peter Fox (S, SS)*	Peter Flynn (SS)	Noleine Fitzallen & Jane Watson (P)	Catherine Grace (G)
R4	Greg Oates (G)	Emily Peterson (P, S)	Richard Korbosky (P, S)*	Bruce Duncan (S, G)
R5	J Lawton & R Korbosky (P, S, G)*	Howard Reeves (P, S)	Kathy Bunton (S)	Brett Stephenson (S, SS)
R6	Nathan Peterson (Yr 6 + S)	Manga High – Michelle Button (G)*	Gary Anderson (S, SS)	H Prochazka & M Murphy (G)
A	**Presenter:** Honorary Professor Derek Holton **Presentation:** The Greek Papyrus (G) **Abstract:** A Greek Papyrus is found with clearly marked numbers in the form of a subtraction. 400 is obvious twice and there are two 4's floating around. There are also two repeats of two other unknown numbers. All of the numbers are organised in a subtraction problem where the answers are equal. Find the unknown numbers. The solution requires knowledge of subtraction of two 3-digit numbers (or, worse still, algebra). During the solving of this problem I hope you will experiment, guess, prove, extend and maybe even generalise.	**Presenters:** reSolve (Toni Popowski, Steve Thornton & Kristen Tripet) **Presentation:** Creating a Spirit of Inquiry in School Mathematics – The reSolve Classroom Resources (P, S) **Abstract:** reSolve: Mathematics by Inquiry is an Australian government funded project that is part of the STEM Strategy for Australian schools. In this session, we will look at the **Years 5 – 8 classroom resources** that have been developed in the project and that are now publicly available to all teachers. The resources are designed to exemplify the reSolve: Mathematics by Inquiry Protocol, which emphasises mathematical purpose, challenge and access, and a knowledge-building culture. The resources are designed to engage students in rich mathematical experiences and to provide teachers with practical suggestions to create a spirit of inquiry in the mathematics classroom.	**Presenter:** Louise Hodgson **Presentation:** Summarising learning in a Maths lesson: Why it is so difficult and what we can do about it! (G) **Abstract:** The summary phase of a lesson is difficult to orchestrate, consequently teachers infrequently practise this phase of the three-part lesson structure. This is because it is hard to align the different approaches that students generate in response to challenging tasks with the learning goals of the lesson. In this presentation, I will share some strategies that assist moving students from "show and tell" to progressing their thinking collectively toward the mathematical ideas that are the goal of the lesson.	**Presenters:** reSolve (Toni Popowski, Steve Thornton & Kristen Tripet) **Presentation:** Creating a Spirit of Inquiry in School Mathematics – The reSolve Professional Learning Modules (G) **Abstract:** reSolve: Mathematics by Inquiry is an Australian government funded project that is part of the STEM Strategy for Australian schools. In this session, we will look at the reSolve professional learning modules that are available for teachers and schools to enhance their professional learning. The resources are designed to elaborate and explain the reSolve: Mathematics by Inquiry Protocol, which emphasises mathematical purpose, challenge and access, and a knowledge-building culture. The resources provide practical suggestions and experiences for teachers focussed around issues such as including all students in mathematics, identifying the mathematical purpose and potential of tasks, initiating and sustaining challenge, and building on student responses.

	Session 1 – 10am	Session 2 – 11:20am	Session 3 – 12:10am	Session 4 – 2pm
R1	**Presenter:** Birsin Reynolds **Presentation:** Data Representation and Interpretation (EC, P) **Abstract:** In this workshop we will be exploring different lesson structures using children's literature as a stimulus for mathematical investigations. We will engage with rich tasks that align with- Practical Representations, Considering Options and Purposeful Games using the book 365 Penguins by Jean-Luc Fromental. You will make a Penguin Glyph of yourself and together we will become 'Penguin Investigators' as we gather, represent and interpret data.	**Presenter:** Richard Korbosky **Presentation:** Maths Card Games for F-2: A Strategy for Early Number Understanding and Fluency (EC, P)* **Abstract:** Get your students excited to learn and communicate mathematically playing maths cards games: Subitising Game, Count – Oh Game, Numbers 20-110 Game and the Problemo Game. The cards are enjoyable, challenging and adaptable to different student ability levels.	**Presenter:** Aimee Woodward **Presentation:** Towards a Positive Approach to Teaching for Productive Disposition in Mathematics (G) **Abstract:** The Australian Curriculum: Mathematics defines four proficiency strands. The work from which they are drawn includes a fifth proficiency (productive disposition) that relates to students' propensity to persevere and to perceive mathematics as worthwhile. I argue for the importance of productive disposition as reflective of the importance of affect in mathematics leaning. I link it with work in positive education, particularly around character strengths, to suggest ways in which Mathematics teachers might develop productive disposition in their students and thereby improve achievement.	**Presenter:** Tempest (Ann Ruckert) **Presentation:** Leading Staff Development with *Dimensions* Learning Modules (G) **Abstract:** This workshop complements the "Investigating Geometric Reasoning through the *Dimensions* Portal" workshop (Session 3) and is designed primarily for those mathematics leaders who have expressed interest in The Engaging Local Leaders Initiative (ELLI) which is attached. It draws on an early draft of a module designed to support in-school leaders to use the *Dimensions* materials effectively, including practical advice about how to read and use the Facilitator's Guide. **Those interested in participating in this workshop are asked to register their interest via http://tiny.cc/elli-eoi so that information can be emailed prior to the Conference.**

	Session 1 – 10am	Session 2 – 11:20am	Session 3 – 12:10am	Session 4 – 2pm
R2	**Presenter:** Sue Dishington **Presentation:** Maths Pathways (S) **Abstract:** Calvin Christian School adopted Maths Pathway earlier last year. It was a daunting prospect for us, because it involved so much change and reform to the way we structure and deliver our Maths course. However, we decided to take the plunge and the results are incredibly interesting. In this session, you will hear about the challenges and successes we've had along the way, where our school is up to at the moment, and what our next steps will be.	**Presenter:** Katrina Rudolf & Miriam MacGregor **Presentation:** Mathematical Mindsets (G) **Abstract:** In Maths, you need more than a growth mindset; you need a Mathematical Mindset! We began trialling Jo Boaler's Mathematical Mindsets approach at Ogilvie last year. In Term 3, we decided that we would implement in 2017. This meant making changes, including more group work, low-floor high-ceiling tasks and removing streamed classes. We are finding that developing Mathematical Mindsets in students and teachers is the key as it fosters understanding, reasoning and problem solving. Our presentation will explain the Mathematical Mindset approach, the steps we have taken, the changes, challenges and successes so far and our plan for continued implementation.	**Presenter:** Tempest (Ann Ruckert) **Presentation:** Investigating Geometric Reasoning through the Dimensions Portal (G) **Abstract:** Geometric reasoning is the use of critical thinking, logical argument and spatial reasoning to solve problems and find new relationships. In this session, participants will be introduced to a series of high quality professional learning modules on geometric reasoning by examining plane shapes that will be available through the *Dimensions* Portal on the AAMT website. Although the materials are designed to be used by school-based leaders working with teams of teachers, this session will be relevant for any teacher who teaches geometric reasoning. The presentation will provide opportunities for teachers to discuss issues, apply new approaches in the classroom and reflect on their experiences.	**Presenter:** Greg Oates **Presentation:** Origami: Folding the Curriculum (G) - **Repeat of Session 1** **Abstract:** Most teachers are probably familiar with some uses of Origami in mathematics. This will be a practical workshop where teachers will have an opportunity to learn more about Origami techniques and how paper-folding can be used to motivate and explore different areas of the curriculum, including geometry, ratios and the potential for cross-curricula projects in science and art. We will fold a triangular prism and a modular octahedron, look at how we can fold paper to demonstrate ratios such as halves, thirds, and if there is time, the focal point of a parabola.

	Session 1 – 10am	Session 2 – 11:20am	Session 3 – 12:10am	Session 4 – 2pm
R3	**Presenter:** Peter Fox **Presentations:** Problems Worth Coding (S, SS)* **Abstract:** How many times is Coding or Programming mentioned in the Australian Mathematics Curriculum? The answer appears the same in binary and decimal. Coding develops critical thinking, reasoning and problem solving. Coding requires students to contextualise and de-contextualise problems and promotes perseverance on a task. In this workshop, participants will explore great maths problems that illustrate how coding is as much a part of the solution process as algebra, geometry and calculus. The problems presented are applicable to students in Yr 7 to 12, involve only basic programming and can form part of an investigation or project. No prior coding experience necessary. Calculators will be used as the programmable platform. Experienced programmers are welcome to bring their own platform.	**Presenter:** Peter Flynn **Presentation:** Statistical Inference in Mathematics Methods (SS) **Abstract:** In this practical session, participants will undertake a range of simulation-based activities devised to promote enhanced conceptual understanding of distributions of sample proportions and confidence intervals. While the technology used in this session will be TI-Nspire CAS, teaching ideas emanating from the session can be applied to other platforms. No experience with the TI-Nspire CAS is necessary.	**Presenters:** Noleine Fitzallen & Jane Watson **Presentation:** The Heat Is On! (P) **Abstract:** Come to this workshop to work through an activity that utilises data collection, representation and analysis to support understanding of heat transfer and insulation. Developed to address STEM education, it targets learning in Mathematics, Science and Digital Technologies. Attendees will complete the activity and then discuss the benefits, issues, and challenges of implementing the activity in the classroom. Although implemented with Year 3 students, the multidisciplinary nature of the activity makes it suitable for the learning of the Mathematics Curriculum strand of Statistics and Probability across the primary years of schooling.	**Presenter:** Catherine Grace **Presentation:** From Telling to Listening: My Journey of Changing Practice (G) **Abstract:** In this presentation I will share how I shifted from telling students how to solve problems to allowing them to think for themselves. I will discuss key elements of classroom based professional learning that facilitated my shift in practice as well as challenges and questions that the PL raised. These include classroom modelling, prior lesson discussion, challenging tasks, collaboration and discussion, student engagement, co-teaching and creating a culture of risk-taking.

	Session 1 – 10am	Session 2 – 11:20am	Session 3 – 12:10am	Session 4 – 2pm
R4	**Presenter:** Greg Oates **Presentation:** Origami: Folding the Curriculum (G) **Abstract:** Most teachers are probably familiar with some uses of Origami in mathematics. This will be a practical workshop where teachers will have an opportunity to learn more about Origami techniques and how paper-folding can be used to motivate and explore different areas of the curriculum, including geometry, ratios and the potential for cross-curricula projects in science and art. We will fold a triangular prism and a modular octahedron, look at how we can fold paper to demonstrate ratios such as halves, thirds, and if there is time, the focal point of a parabola.	**Presenter:** Emily Peterson **Presentation:** Back to the Origins: Teaching Mathematical Vocabulary through Greek and Latin Roots (P, S) **Abstract:** The origins of mathematical vocabulary can hold significant and helpful meaning. Making these original meanings explicit to students improves their understanding of the vocabulary that they are learning. It also challenges us as teachers to deeply understand the vocabulary, and therefore the concepts, that we are teaching. This workshop will show you why teaching word origins in Mathematics is important and how to go about doing this. You will receive materials that you can use straightaway in the classroom.	**Presenter:** Richard Korbosky **Presentation:** Maths Card Games for Years 3-8: A Strategy for Developing Understanding, Basic Number Facts, Fluency and Flexible Thinking (P, S)* **Abstract:** Come along and have some fun. Get your students excited to learn, think and communicate mathematically playing maths cards games: Times Table Games, Tenth Game, Hundredth Game, Fraction Games and the Relato Game, which links fractions, decimals and percentage. The maths cards are enjoyable, challenging and adaptable to different student ability levels. See how you can get students to practice basic facts using a different strategy, focus on mathematical language, see the same concept represented in different ways and develop student's flexible mathematics thinking.	**Presenter:** Bruce Duncan **Presentation:** Fighting the Math Wars: Stories from the Battlefield (S, G) **Abstract:** Constructivist approaches to teaching mathematics have been around for longer than I have been teaching (over 30 years). Widespread adoption of constructivist strategies such as discovery learning, investigations and group discussions has not happened, despite the evidence that children learn better when they think about mathematics. The term "Math Wars" has been used to refer to the active resistance to the reform of teaching practices in mathematics. Some people insist that the old ways are best. In this workshop, I share some insights from my own research into constructivist approaches in lower secondary classrooms.

	Session 1 – 10am	Session 2 – 11:20am	Session 3 – 12:10am	Session 4 – 2pm
R5	**Presenters:** John Lawton & Richard Korbosky **Presentation:** Empowering Students through Active Learning with the *Mathomat* Geometry Template Series (P, S, G)* **Abstract:** Geometry, as the study of the properties of shape and space, usually involves thinking and reasoning about diagrams. To do this successfully involves a creative challenge that engages students in transitioning between different *ways of* reasoning, not just different *levels*; the use of concept imagery is central to this process. Researchers, such as Clements and Sarama (2011), have found that geometry in early primary school is often ignored or minimised; doing this not only causes a need to deal with misconceptions in later school years, it also denies young children access to a broad understanding of what mathematics really is. *Mathomat* geometry templates are powerful tools for classrooms. Their symmetrical, integrated, design and densely packed field of geometric shapes inspire students to draw creatively. In this workshop, Richard Korbosky demonstrates how *Mathomat* can be used by teachers to engage students in creative drawing and how this can lead to a rich discussion about their geometric and spatial reasoning, and mathematical thinking by introducing the newly developed *Mathomat* Primary template.	**Presenter:** Howard Reeves **Presentation:** Challenging Problems (P, S) **Abstract:** The session will give participants an opportunity to look at and work on some challenging mathematical problems from the vast catalogue of resources developed by the Australian Mathematics Trust and used in the Mathematics Challenge for Young Australians. A collection of problems and resources to challenge the more able students in your classroom. And, there's still time to participate in the 2017 Challenge!	**Presenter:** Kathy Bunton **Presentation:** Sum of Squares and Sum of Two Primes (S) **Abstract:** This lesson from the *reSolve: Mathematics by Inquiry* resources for **Year 7** explores the hypothesis of Diophantus, that any positive integer can be represented as the sum of four square numbers. Students explore the patterns that are generated by the sums of square numbers, as they work systematically to rediscover and test the hypothesis. There are patterns of differing complexity to find, so the investigation is accessible to all. The lesson model has been adapted to the exploration of Goldbach's conjecture: that every even number greater than 2 can be written as the sum of two primes.	**Presenter:** Brett Stephenson **Presentation:** Four Constants and a Calculator (S, SS) **Abstract:** Finding the value of a constant by discovery is much more fun that just having them provided by an expert. This workshop will look at how technology can assist students to discover some of the greatest constants in mathematics. You can probably guess some of the constants but workshop attendees will be 'kept in the dark' until the discovery phase.

	Session 1 – 10am	Session 2 – 11:20am	Session 3 – 12:10am	Session 4 – 2pm
R6	**Presenter:** Nathan Peterson **Presentation:** Wondering about Numbers (Yr 6 + S) **Abstract:** During this session, you'll wonder about very large numbers and about number patterns. You'll even use a number pattern to create your own piece of art! The session will give you two stand-alone lessons to use with students in **Years 6 – 8**.	**Presenter:** Michelle Button **Presentation:** Manga High (G)* **Abstract:** Do you wish that there were fun yet challenging online games that your students could play that actually reinforce specific number skills? Or geometry skills? Or other specific Maths skills? Welcome to Manga High! You can track students' progress, set tasks and reward students for their efforts.	**Presenter:** Gary Anderson **Presentation:** Make It Formative! (S, SS) **Abstract:** Formative assessment in Maths classes informs both teachers and students about student understanding at a point when timely adjustments can be made. In this session, we will look at a range of some formative assessment strategies that are easy to adapt and use in almost any classroom. There should also be time to look at where course writing for senior secondary courses for 2019 is up to in the post ACER report 'world'.	**Presenters:** Helen Prochazka & Maurice Murphy **Presentation:** A New Perspective: Using Pop-song Poetry in Maths (G) **Abstract:** In this seminar we describe how we created a cycle of fourteen poems to add emotional context and a big picture perspective to a mathematics book. We wanted to show that: Maths is more than measurement and number calculations More than geometry, statistics and algebraic manipulations So we set out to elucidate its beauty, heart and history Its concepts, connections and contexts – and do it all with poetry! Those poems have since morphed into a remarkable music album and the book has become a beautiful multi-faceted coffee table volume, *The Mathematics Book*!