First Name	Last Name		Institution	Session Title	Session Abstract
Dan	Finkel		mathforlove	Making and Breaking Conjectures	We have the delightful opportunity to invite our students to be mathematicians - but can students really be expected to do the same intellectual work as real mathematicians? The answer is yes! Introducing *Making and Breaking Conjectures,* a structure that is key to the development and practice of mathematics at all levels, and simple enough for young children. In this session, we will unpack the process of making conjectures and breaking them with counterexamples, and see the shift in mathematical outlook and classroom culture that results when you use this process with students. With this framework, we can create classrooms that value rigorous mathematical thinking and argument, produce productive skepticism, help students own their understanding, and get everyone engaged in mathematics.
Dianne	Siemon		RMIT	Targeted Teaching Workshops	Targeted teaching is a form of differentiated teaching that responds to identified student learning needs in relation to a big idea in mathematics, such as trusting the count or multiplicative thinking without which students progress in mathematics will be severely impacted. Targeted teaching relies on quality formative assessment data and evidence-based advice to inform teaching. It is most effective where students work in mixed ability groups for the majority of their mathematics classes but participate in small groups on a weekly or fortnightly basis to focus on a specific aspect of a big idea. This session will explore how targeted teaching works in practice and highlight the work of the *Reframing Mathematical Futures II* project that is exploring the efficacy of formative assessment and targeted teaching approaches in 32 secondary schools around Australia, including four in WA.

First Name	Last Name	Co-Presenter	Institution	Session Title	Session Abstract
Cora	Algie		St Hilda's Anglican School for Girls	From building on sand to building a sandcastle: A whistlestop tour of formative assessment strategies	Research shows that providing opportunities for formative assessment can have a significant influence on student achievement, but what does this actually look like in the classroom? How can we evaluate our students' understanding, provide effective feedback and teach more dynamically without adding to our existing workload? Hop on board to discover many quick and easy ways to implement formative assessment, both new strategies and forgotten old chestnuts. All ideas can be integrated into tomorrow's lessons with little or no planning, or fuss.
Alice	Alibrandi	Wendy Surgeson	John Wollaston Anglican Community School	Licence to modify!	Do you need advice on how to cater for students in lower ability classes? Students who struggle to learn? Engaging those who are reluctant? Students who may have learning difficulties? Students who lack motivation? AND confidence??? Hear from Wendy - Head of Mathematics and Alice - Head of Inclusive Education. We will share our story, give you lots of practical ideas, explain how using Differentiation techniques and Universal Design can make a difference and help you engage your students. Also – discover the importance of a growth mindset and establishing a positive outlook from day one! If you are open to hearing our suggestions, or even have some of your own to share, please come along and spend some time with us.
Justine	Allen		Cape Naturalist College	Making the concepts of percentages, rates and ratios accessible to all	An inclusive strategy for teaching percentages, rates and ratios; with the added benefit of encouraging problem solving, different ways of thinking and 'having a go'.
Dr Jack	Bana		MAWA	Problem solving in years 7-10	Problem solving is considered to be the heart of mathematics, yet it rarely gets the attention it deserves in the teaching and learning of mathematics. In this session, we will focus on all the problem-solving strategies that can be used in the classroom, and also indicate sources of problem-solving experiences for students in these school years. You will also be given a set of 30 problems suitable for your mathematics classrooms.
Cara	Barrett		Peter Carnley Anglican Community School	Differentiation: A practical guide	Differentiation is about supporting and challenging all students, regardless of level. This session looks at strategies that can be employed in any mathematics classroom by any teacher to enable them to differentiate by task, ...by resource, ...by support and ...by response (outcome). It provides an opportunity to experience differentiation as an integral part of teaching rather than an afterthought.
Anne-Marie	Benson		SCSA	What is a Practical Application in Mathematics Essential?	Hands-on workshop that will walk participants through the process of writing practical applications in mathematics.

Dr Paul	Brown		Curtin University	An experiment which may change your teaching practice	We will do a test which contains some routine questions and some trick ones. Some are calculus questions. We will discuss the answers and consider the implications for our teaching.
Donna	Buckley	Henry Strain	MAWA	Maths Talent Quest	Looking at real-life situations and finding that mathematics is everywhere, helps capture the imagination of both teachers and students alike. The Maths Talent Quest allows students to investigate mathematics on an individual, group or class basis with the opportunity to have fun exploring mathematics in real-life situations. This is an opportunity for students to use their STEM skills in the mathematics classroom.
Jayne	Bullock		Mathspace	Free online mathematics resource, supported by Westpac	Mathspace has partnered with Westpac to make their online digital textbook, Mathspace Essentials, free for all Australian teachers and students. Mathspace steps away from the multiple-choice method to meet students where they are really learning during the problem-solving process and provide support at each step of their working out. Find out why Westpac has chosen to partner with Mathspace to help the next generation to achieve a brighter future by strengthening their numeracy skills. • Mathspace Essentials for years 3-12, covers the Australian Curriculum, Methods/Specialist curricula, aligned to Sadler and Nelson. • Rich features, including thousands of worked example videos, interactive applets and step-by-step support.
Joan	Burfitt		UWA	Multiple-choice items: An analysis	Multiple-choice (MC) items are predominant in many assessments of mathematical skills and understandings for students in Western Australia. While there are many concerns with the use of MC items, their benefits are such that they will probably continue to be used. After a discussion of the guidelines recommended for creating and recognising good MC items, participants will analyse some of the items used in a research study. This analysis will include consideration of the students' results and the identification of remediation activities to address the misconceptions identified. The workshop will conclude with a discussion of recommendations for students who need to complete MC items in their assessments.
Tania	Christie		Education Perfect	Empowering and promoting self-regulated learning	Formative assessment is specifically intended to generate feedback on performance to improve and accelerate learning, and is a process to help instructors understand their students' day-to-day learning and develop appropriate interventions to improve that learning. Education Perfect provides a platform that allows students and teachers to be informed and provide feedback to adjust ongoing teaching and learning. In this session, you will be provided with a demonstration that shows how Education Perfect allows teachers to customise content or find Australian Curriculum aligned content, set and assess tasks, create competitions, build assessments and track student progress. This can inform teachers on their teaching, assessment and reporting cycle of the differentiated classroom. Students are therefore provided with contextual, competitive activities that can have a positive impact on their learning journey.
Rom	Cirillo	Rachael Whitney-Smith	MAWA	Creating quality assessment tasks - Mathematics Applications and Mathematics Methods	Do you feel that your assessments need improving? This interactive workshop will assist teachers to develop a process to review assessment tasks and prepare response/investigative items that will assist you to determine which of the grade-related descriptors are being displayed by students. Teachers may choose to work on Mathematics Applications or Mathematics Methods.
Robin	Clarke		E.R.S. Education Research Solutions	Assessments FOR learning: Proficiency development	Mathematics is the solution and not the problem. Participate in a hands-on workshop to replicate the student learning experience. Automated marking and immediate feedback provides the opportunity for proficiency development.
Jody	Crothers		Safety Bay Senior High School	Weather or Not	Big Messy Data. The world around us provides us with limitless data. In this session, we will work historic data from all over the world, as well as large sets of messy Big Data. From tables to column graphs to line graphs to sinusoidal functions, we will look at various ways to display, measure and interpret the information provided.

Lorraine	Day		University of Notre Dame	Algebraic reasoning: It's about noticing structure	The Western Australian Curriculum: Mathematics develops Number and Algebra together "as each enriches the study of the other" (ACARA, 2017). This represents a paradigm shift from emphasising number in the primary years and algebra in the secondary years. This made the transition from arithmetic to algebra difficult for many students, as it was a big jump from calculating numerical answers to representing relationships. Concentrating on the underlying structure of mathematics and forcing students to notice that structure will enhance the analysis of relationships, understanding the nature of variables and constants, generalisation and reasoning algebraically - all of the things necessary to be a successful student of algebra.
Dr Amanda	Draper		Dalyellup College	When are we going to use this? Time to be honest with students	One of the most common questions asked about any new topic is "When are we going to use this?" Textbooks have been written and teachers have spent many hours trying to make 'real world' connections. However, when we are honest with the students, the answer is that many will never use the skills they learn in our classes, and that is OKAY! Football players never do push-ups in the middle of a football game and swimmers never lift weights while doing backstroke. For many students we need to change the way they view mathematics as an exercise in thinking and problem solving, rather than learning skills that they will use exactly the way they did on a test in the 'real world'. This session explores how this dialogue with students and our own way of thinking needs to change to meet the reality for many of our students who won't actually use this in the 'real world'.
Dan	Finkel		mathforlove	Reflective geometry and star polygons	In this workshop, we will explore the mathematics of reflections: think of a billiard ball bouncing off a wall, or a laser bouncing off a mirror. We'll make and break conjectures as we discover beautiful mathematics in this novel environment.
Dan	Finkel		mathforlove	On the grid: An experience with making and breaking conjectures	The grid is one of the most familiar mathematical objects we have, but when we approach it by making conjectures and then breaking them, it can lead us to exciting new revelations. In this workshop, we will take a fresh look at grids, and explore the fascinating mathematics that lives therein.
Peter	Flynn		Texas Instruments	Mathematics Specialist: Using CAS to teach complex numbers	In this session, participants will be introduced to some visually dynamic and engaging ways of using CAS calculators to teach important concepts and theorems in the topic of complex numbers. Minimal previous CAS knowledge is required and users of all CAS calculators are welcome to attend.
Peter	Fox		Texas Instruments	Problems worth coding	Coding develops critical thinking, reasoning and problem solving. It requires students to contextualise and de-contextualise problems, promotes perseverance on a task and fits nicely into current STEM initiatives. In this workshop, participants will explore great mathematics problems that illustrate how coding is as much a part of a solution as algebra, geometry and calculus. Problems presented are applicable to students in years 7 to 12, involve only basic programming and can form part of an investigation or project, and become a part of students' mathematical journey. No coding experience is required.
Peter	Fox		Texas Instruments	Great explorations	It’s time to go beyond the LHS. Procedural knowledge and repetition are often over-represented in the mathematical calendar. In this workshop, participants will engage in a collection of great mathematics problems worthy of exploration. Participants will choose from a selection of problems applicable to students ranging from year 7 through to year 12. Some discussion will also be generated about how these and similar problems have been used to cater for students in mixed ability classes and to serve as bookmarks for students’ future mathematics course selections.
Jennifer	George		Carmel School	If the answer is 42, what is the question?	All too often we give students questions and ask for the answer. Sometimes we allow them to extend the problem and other times not. Well, I'd like to show you how we are incorporating rich tasks and problem solving by asking the student for both the questions and the answers. We are encouraging them to think for themselves in a guided environment and hoping they will use this ability while out in the wider world. We don't just want our students to be able to find answers, we want them to be able to creatively question their world.
Mark	Hackling	Michael Peter	STEM Consortium	STEM Learning Project	

Michael	Haese		Haese Mathematics	Probability paradoxes	Probability provides us with some really lovely paradoxes which challenge our intuition as much as our subject knowledge. They are also problems with great appeal to students, providing motivation to engage with and explore mathematics further, provided we can adequately explain what is going on. In this session, I will present two classical problems of conditional probability, and show how a tree diagram and perhaps a little "trick" can be used to understand them.
Karen	Hanna		Kennedy Baptist College	How to bring life and relevance to statistics	Come along to this interactive workshop filled with ready-to-use or adaptable statistical activities and assessments that come from real-life situations. From the fun birthday problem through to how we tackle development issues, statistics is highly relevant in this information age. (Bring a usb, charged device and CAS ClassPad with cables). Mostly 7-10 but some relevance to upper school courses.
Suzie	Harman		SCSA	What is an Investigation ATAR Mathematics?	Hands-on workshop that will walk participants through the process of selecting, writing and assessing investigations in mathematics.
Dr Gregory	Hine		University of Notre Dame	Proof by mathematical induction: Professional practice for secondary teachers	In this session, some useful approaches will be presented for educators teaching the Year 11 Mathematics Specialist topic of Real and Complex Numbers (Topic 2.3). Consistent with the Western Australian Curriculum, sub-topics will include: Proofs involving numbers and Proof by mathematical induction. In particular, we shall focus on approaches used to work through three common types of problems involving mathematical induction: general series, inequality statements and divisibility statements. Although this workshop is intended primarily for those preparing to teach this content for the first time, all are welcome to attend.
Norm	Hoffman		MAWA	An old hand looks at the teaching of algebra	On the basis of more than sixty years involvement in school mathematics, I will analyse and comment on a number of basic aspects of the nature of algebra and its teaching. Participants will have the opportunity to raise issues. What is the basic vocabulary of algebra? Is it important that students understand this vocabulary? Is algebra just a bunch of arbitrary rules? Is there a basic structure in algebra? Are the mysteries of algebra explainable?
Jan	Honnens		Australian Mathematics Trust	Informatics: Challenging, inspirational and relevant coding	At Christ Church Grammar School we have, over the last few years, gradually built a culture of enjoyment and excellence in informatics based on lunchtime sessions, informatics coding camps and a year-round involvement in computer programming competitions. Informatics, a mix of computer programming and mathematical thinking, has become a key motivator for many of our students and has helped them unleash their potential in both computer science and mathematics. In this session, we will briefly look at our informatics club model and discuss a solution (in Python) to a problem from four of the eight computer programming competitions that we use.
Paul	Hooper		Efofex Software	Using the new Efofex cloud versions	The new Efofex cloud versions make Efofex products useful in a much greater range of contexts. Use your products on Windows, Mac, in Google docs, Moodle, LibreOffice, OneNote - just about anywhere. Graphics remain editable, regardless of the context. While you can still use Efofex products in the same traditional way, the new versions will vastly increase the usefulness of the tools. This session will discuss the new versions but also allow time for lots of "How do I..." type questions.
Leigh-Anne	Hopkins	Annette Butcher	Lake Joondalup Baptist College	Differentiation …. A better way!	Have you had enough of walking into a classroom and knowing that the faces looking back at you simply do not know what you are talking about? Perhaps there are those that need to be extended beyond the level of the curriculum for their age group. The idea of offering a differentiated learning program is actually possible! At Lake Joondalup Baptist College, we have introduced the Maths Pathway learning model to our year 7 cohort. We will discuss our learning journey, including teacher training, setting up a uniquely 21st-century learning classroom and diagnosing the diversity of individual student needs. Yes, students do work on their own program but the learning environment is enhanced through rich tasks and project-based learning providing student collaboration. We believe that every student deserves to understand mathematics at their level and not simply be restricted to a “one size fits all” system. Come and find out how we are making this happen using Maths Pathway.
Andrew	Hubery		Mindarie Senior College	ClassPad for beginners	Having worked with various schools over the last couple of years, it has been noticeable that students are still not using their ClassPad efficiently. In this workshop, we will aim to go ‘back to basics’ and look at some simple ways of using the calculator. Time permitting, we will move on to really customising the calculator to suit the individual.

Sonia	Hueppauff	Alice Alibrandi & Wendy Surgeson	Just Think Cognition / John Wollaston Anglican Community School	Thinking Maths – An engaging thinking skills program to develop STEM/enterprise skills in students, and one school's journey to do this.	Improving students' abilities to think, reason and problem solve are fundamental requirements of education in the 21st century. 'Thinking' is a core skill in many school curricula across the world; however, how teachers should go about promoting thinking in students is rarely clearly articulated. Thinking Maths (also known as Cognitive Acceleration through Maths Education - CAME) is an educational intervention program based on CA theory and was developed through research. Thinking Maths is carried out in 30 mathematics lessons over a two-year period (years 7 and 8). Research data shows that students make considerable cognitive gains as a result of the intervention and teachers change their pedagogy by allowing students to think. In this session, you will take away information about Thinking Maths and hear from teachers at John Wollaston Anglican Community School about their implementation journey so far.
Greg	Hurn		MAWA	Mathematical lesson starters	MAWA is developing some digital lesson starters that give an overview of a topic, such as calculus, to provide students with some idea of what it is and how it was developed. It also gives examples of the types of careers that would use calculus, and practical applications of its use in the real world. Last year we presented an early version of these but in response to feedback, have raised the bar and used real-life video clips and pictures, etc to make these presentations more appealing to students. There is very little similarity between the first version and these new ones, and you are sure to find these dynamic videos a useful way to introduce many different topics and to show your students where they might end up using a particular concept or broader subject.
Tierney	Kennedy		Tierney Kennedy	Catching kids up quickly and making it stick - Part 1	When students come to high school multiple grades behind, it can be a daunting task to teach them at an appropriate level. In this session, teachers will be provided with diagnostic testing and an approach that has a proven effect size at grade 7 of 0.61 in PATm with 1-2 lessons per week over only 6 months, as part of a normal mathematics program. The results for targeted intervention are much higher. NAPLAN results show cohort growth that is 35% higher than like schools, again in 1-2 lessons per week. This approach can be used by any teacher without fancy resources, and by out-of-field teachers. It requires a signficantly different approach to questioning and targeted developmental sequencing. This is Part 1 of a double session and participants are expected to attend both sessions.
Tierney	Kennedy		Tierney Kennedy	Catching kids up quickly and making it stick - Part 2	When students come to high school multiple grades behind, it can be a daunting task to teach them at an appropriate level. In this session, teachers will be provided with diagnostic testing and an approach that has a proven effect size at grade 7 of 0.61 in PATm with 1-2 lessons per week over only 6 months, as part of a normal mathematics program. The results for targeted intervention are much higher. NAPLAN results show cohort growth that is 35% higher than like schools, again in 1-2 lessons per week. This approach can be used by any teacher without fancy resources, and by out-of-field teachers. It requires a signficantly different approach to questioning and targeted developmental sequencing. This is Part 2 of a double session and participants are expected to attend both sessions.
Barry	Kissane		Emeritus Professor, Murdoch University	Popular mathematics	Popular mathematics seems to be not very popular in either schools or society at large. In this session, we briefly explore the meaning of popular mathematics, and consider some of the ways in which it might be of value to mathematics education in schools, particularly secondary schools. Various kinds of popular mathematics are identified and briefly illustrated, and the prospects for supporting and complementing the school mathematics curriculum discussed.
Barry	Kissane		Emeritus Professor, Murdoch University	The educational use of scientific calculators	Scientific calculators are often regarded merely as devices for doing calculations rather than as tools for students to learn with and from. In this hands-on session, we will explore a model for learning mathematics with calculators and consider some examples of productive activities for students in the middle years. Feel free to bring the scientific calculator used by your students, but calculators will be available to borrow, if necessary.
Richard	Korbosky		MAWA	Maths card games that make you think	Come along and have some fun. Get your students excited to learn, think and communicate mathematically playing mathematics cards games: Times Table Games, Tenth Game, Hundredth Game, Fraction Games and the Relato Game which links fractions, decimals and percentages. The maths cards are enjoyable, challenging and adaptable to different student ability levels. See how you can get students to practise basic facts using a different strategy, focus on mathematical language, see the same concept represented in different ways and develop students' flexible mathematics thinking .

Rama	Krishnan		STEM/Lumeracy Consultancy	STEM and STEAM - Teaching with technology and lumeracy	“Many people think that STEM means technology and coding. That is one part of the bigger picture.” Dr. Linda Pfeiffer. STEM is about the skills required to learn science, technology and mathematics, and how engineering and design principles are used to achieve an outcome. Rather than teaching the four disciplines as separate subjects, STEM integrates them into a cohesive learning paradigm based on real-world applications. Innovation remains key in the STEM subjects but art and design are poised to transform our economy in the 21st century. We need to transform STEM into STEAM. The STEM to STEAM initiative is championed by the Rhode Island School of Design (RSID). This workshop explores using lesson ideas and suggests lesson plans to integrate of all these disciplines for the middle and secondary classrooms.
Brian	Lannen		Wodonga Institute of TAFE	STEM in a box	What is in the box? This box can control motors and lights, read temperature, detect motion and much, much more. This little box can connect to a computer or your TI-Nspire calculator making it a portable, accessible and inexpensive STEM solution! Come along and play as we explore a collection of easy and engaging investigations written and used by classroom teachers. All equipment will be provided and no experience is necessary. See what all the excitement is about. The TI-Innovator really is a STEM solution in a box.
John	Lawton	Richard Korbosky	Objective Learning Materials	Understanding geometry using the Mathomat template	Symmetry is a central theme in geometry, and is important for making sense of the world. Developing a deep understanding of symmetry is one of several underlying themes in the revised Mathomat student book. This workshop begins in an intuitive hands-on way by engaging participants' physical senses as they operate the Mathomat template to transform creative 2-D patterns. A more scientific approach to symmetry follows, in which the four isometries of the plane are introduced using Mathomat. These can fully explain earlier Mathomat transformations, as well as giving insight into subsequent line and rotational symmetry operations. This workshop will also introduce the new Mathomat Primary template for early years. Commercial wokshop.
Vinitha	Lobo	Jan Honnens	St Hilda's Anglican School for Girls	Enrichment opportunities for all through coding	The future of our world is digital. It is becoming crucial to provide a child with a rich foundation in the integral thinking and problem-solving skills required for digital approaches. As a school, how can we support this process? The objectives for this session are *Where to get started, *Opportunities available for students which use their mathematical and logical skills, *Discussion of competition questions-Thinking involved, *Gentle and fun session on Python coding, *Where to get support. ***Please note, session participants will require a laptop and download python 3.6***
Peter	Merrotsy		UWA	By the waters of Babylon	This workshop will translate ancient Mesopotamian mathematics into two investigations that explore the square root of 2, and Pythagorean triples. Of course, everyone counted in a sexidecimal (base 60) number system, at least in Mesopotamia. And everything counts, especially in the history of mathematics.
Helen	Middleton		Murdoch University, External Engagement	Introducing lower secondary students to investigations using mathematical processes – having fun with light, sight and a few bugs	This hands-on workshop will illustrate how lower secondary students might be introduced to scientific and mathematical processes. Using a fun and accessible scenario involving bugs and their prey, the workshop activity will introduce the concept of a simulation, the effects of changing different variables, the development of types of curves and how mathematics and science work together to explain the natural world. Working with simple scenarios can lead to understanding of more complex situations and applications. The challenge is to explain to lower secondary students that mathematical thinking is the key.
Belinda	Miller	Stephanie Keen	Baldivis Secondary College	Let's get kids talking and writing mathematics	Have you heard from your students "we only ever take notes and do more questions"? Do you feel like they just aren't interested or maths is the one subject that students don't like? So, how do we get active participation without having to spend hours preparing. Well, we will present a lesson with some note-taking, robust discussion, writing for learning and some collaboration that will keep students accountable and on task while using the mathematical thinking process. You will come away with some easy strategies that are quick to plan for and implement in every lesson, and use the following day in any of your classes. You will enjoy teaching with these strategies and your students will enjoy your class without you needing to juggle for their entertainment.

Wendy	Pero		Catholic Education Western Australia	Creating open-ended rich tasks	Good questions enable teachers to learn about their students. More importantly, they allow students to learn from answering. But what makes a good question? In this session, we will explore the difference between a closed question and an open-ended one, and demonstrate how the latter can provide rich and engaging experiences for students of lower secondary mathematics.
Paul	Presser		Trinity College	Sample proportions using Excel	Don't struggle with introducing and teaching sample proportions. Why not use the power of Excel to simulate this process? Come to this session to explore sample proportions, explore using simulations and explore the use of Excel to speed up the process. (Bring a thumb drive to take the spreadsheet with you.)
Julie	Richards		R.I.C. Publications	Numero for secondary schools	Numero is a mental mathematics resource suitable for all years of primary and secondary education. Numero can play an important role in developing the proficiency strands of Australian Curriculum: Mathematics, especially in the areas of fluency, problem solving and reasoning. Numero is the perfect tool for introducing and reinforcing both simple and more difficult mathematics concepts within a game situation. A variety of Numero activities will be introduced and explained, with all participants 'playing the game' themselves. Join this session and get the most out of such a valuable resource!
Anthony	Robb		St Mary MacKillop College Busselton	Great teaching ideas and resources	This session will look at some lessons that can be used to introduce algebra to year 8 students to help them understand different representations and the use of pronumerals and variables. I will also discuss any new internet sites and resources that I have used and found over the last year.
Alan	Sadler	Sheila Greenaway	Author / Melville Senior High	These have worked for us	Most teachers are capable of thinking of some great approaches to liven up the way in which they introduce and teach various mathematical concepts to their students. However, they rarely have time to think of such activities before the next class, pile of marking or meeting beckons. One of the wonderful things about a conference is that it prompts us to make the time to consider such ideas. So, combining a number of the “no tech” ideas that I have presented previously, together with some “tech” ideas that Sheila has used (such as Desmos and teacher forums from mathematics educators all over the world), we will present and remind you of some simple ideas for teaching mathematics.
Sally	Sharp		St Mary's College	Maths Pathway - Differentiated and personalised learning	Do you dream of a mathematics classroom where each and every student is engaged and learning, where you never hear the question “When am I ever going to use this?” With the Maths Pathway program it is possible; no matter how diverse your students’ mathematical abilities, or how remote your school. In this session, I will detail how the Maths Pathway program works to provide fully differentiated, personalised learning for students. I will also discuss how to implement the program, the benefits and some of the challenges involved, as well as how to overcome them.
Dianne	Siemon		RMIT	Partitioning - A key component of multiplicative thinking	A significant number of students in the middle years of schooling experience considerable difficulty in understanding and applying more formal ideas related to common fractions, decimals, percent and ratio due to their reliance on additive thinking. This session will explore a range of strategies and techniques found to be useful in developing fraction knowledge and confidence at this level. In particular, it will explore the important role of multiplicative partitioning in bridging the gap between informal and formal fraction ideas.
Dianne	Siemon		RMIT	Incorporating proficiencies - Making time	Lack of time is often cited as a reason for not pursuing more open-ended, problem-based approaches to school mathematics. Yet with clever planning, the time can be found. This workshop will explore a planning tool that incorporates the proficiencies, provides multiple opportunities to revisit key ideas and strategies, and values targeted teaching and inquiry-based approaches to the teaching and learning of mathematics, while ensuring an unrelenting focus on the big ideas that make a difference.
Brett	Stephenson		Guilford Young College / Casio	Investigating mathematical laws with technology	The use of technology has enabled the investigation of large data sets to look for patterns. In this session, several theorems will be investigated with technology (particularly the Casio ClassPad) aiding in the discovery phase. The theorems investigated will relate to the starting digits of non-random numbers, patterns in populations and animal measurements (such as metabolic rate).

Jane	Susak		Essential Assessment	Essential Assessment: Assessment made easy!	Essential Assessment provides an easy and affordable way for Australian Primary and Secondary schools to deliver a consistent, whole-school approach to numeracy assessment and curriculum. Our whole-school model to formative and summative assessment provides an online, differentiated assessment and curriculum program aligned to the content descriptions of the Australian Curriculum. Essential Assessment's program assesses and develops student knowledge within each proficiency standard while delivering a reportable Australian Curriculum achievement level, and creates a differentiated online curriculum to progress a student's understanding within each sub-strand of the curriculum! http://www.essentialassessment.com.au
Ernest	Tan		Mathspace	Data-driven teaching - How, why and when should teachers use data?	The use of data in teaching is becoming an increasingly important emerging trend, but how do we know which data is valuable and how to use data effectively? How can data be obtained without adding complexity to an already busy teaching day? In this session, we will explain how Mathspace generated data improves the way teachers teach. Insights will be shared on how obtaining data via Mathspace has reduced workload, improved what teachers understand about student progress and therefore enhanced student learning. Learn about what data can be tracked, gain insights into how current teachers are using Mathspace to collect data, witness how data has influenced teaching practice, discover how user-friendly Mathspace is. Participants need no prior experience with Mathspace.
Rachel	Theunissen		Australian Mathematics Trust	Problem solving counts…..A daily challenge	In this workshop style session, I will be presenting some brand new enrichment materials which are an excellent resource for problem solving. You will see a case study of a group that were convinced of the value of problem solving by solving problems. Participants will have the opportunity to do some problems together and materials will be provided.
Charlie	Watson		The Tuition Centre	2017 ATAR Applications examination discussion, including use of CAS.	This session will look at most questions from both calculator-free and calculator-assumed sections of the 2017 Applications paper. We'll explore any issues arising throughout the paper and discuss how ClassPad applications might have helped students in the latter section. Bring your own ClassPad for a hands-on experience or just come along and take part in the discussion.
Charlie	Watson		The Tuition Centre	2017 ATAR Methods examination discussion, including use of CAS.	This session will look at most questions from both calculator-free and calculator-assumed sections of the 2017 Methods paper. We'll explore any issues arising throughout the paper and discuss how ClassPad applications might have helped students in the latter section. Bring your own ClassPad for a hands-on experience or just come along and take part in the discussion.
Rachael	Whitney-Smith		MAWA	Growth mindset in mathematics - The neuroscience behind it	Developments in neuroscience have led to us learning so much more about how the brain functions and its impact on learning. As mathematics educators, we can learn a lot about factors that influence students' mindset and which can lead to mathematics and performance anxiety. What is neuroplasticity? Our brains can grow and so can our ability to learn. What are mindsets and how do they impact on mathematical learning?
Rachael	Whitney-Smith		MAWA	The maths inside nature - Bees	‘Bees with backpacks’ is one of five sets of classroom resources produced by the Maths Inside Project. Colony-collapse disorder in bee populations has the potential for disastrous effects on plant pollination. Australian scientists are fitting bees with electronic chips to build up a picture of the behaviour of a healthy hive. This workshop incorporates the video and some of the classroom activities from 'Bees with backpacks', as well as resources from elsewhere that highlight how we can teach mathematics through a STEM approach.