

# CMA Conference 17 August 2019

## Speaker Details

### Keynote Speakers

#### 1. Dr Amie Albrecht

Dr Amie Albrecht is a mathematician and Senior Lecturer at the University of South Australia in Adelaide. Her mathematics research largely focuses on solving practical industry-inspired challenges.

Amie has taught mathematics at university for fifteen years, at first teaching just like she'd been taught. Around five years ago she realised the disconnect between traditional procedural-based teaching and the creative, active and collaborative ways in which professional mathematicians work. Amie's teaching interests are now focused on developing mathematical thinking and problem-solving skills by giving students opportunities to think deeply about mathematical ideas, leading them to share delightful and unexpected ways of approaching problems. She also works to inspire and equip pre- and in-service teachers to incorporate authentic mathematical practice in their classrooms.

Amie has presented at Maths teacher conferences across Australia, including giving the Hanna Neumann Lecture at the 2015 AAMT Conference. She served as Vice-President and Treasurer of the Mathematical Association of South Australia, currently sits on the national Mathematics education committees of the Australian Mathematical Society and the Australian Mathematical Sciences Institute, and works with the SA Department for Education. Amie is always looking to improve her teaching practice, which includes currently undertaking a Master of Teaching, blogging at [www.amiealbrecht.com](http://www.amiealbrecht.com) and actively tweeting in the 'Math Twitter Blog-o-Sphere' (#MTBoS) as @nomad\_penguin.

#### Keynote address: **Developing mathematical thinking through problem solving**

Working mathematically is about more than knowing facts, recalling definitions and applying techniques to familiar problems. Five years ago I designed a course to develop problem-solving skills in pre-service Maths teachers at the University of South Australia. We focus on *mathematical processes*, not any particular branch of Mathematics. We learn and practice strategies for: getting started; attacking the problem (e.g. specialising and generalising, being systematic, forming and justifying conjectures); and reflecting on and extending our work.

Classes are centred around carefully chosen puzzles and activities, paired with explicit coaching in mathematical processes, metacognition and collaborative learning. The aims are to: develop students' mathematical thinking skills so that they can tackle unfamiliar problems with confidence; help them experience the joy in asking and answering their own questions; and orient them towards the ways in which mathematicians work. We'll sample some good problems for uncovering aspects of problem-solving, and talk about specific strategies for progressively developing oral presentation and mathematical writing skills. We'll also tackle the thorny issue of assessment, including how to support students to undertake in-depth mathematical investigations of their own choosing. My goal is that you'll find one or two specific ideas that will help in your current teaching or, if you have the opportunity, inspire you to design your own problem-solving course.

## 2. Dr Jane Watson

Dr Jane Watson is Professor Emerita in Mathematics Education at the University of Tasmania. She has been exploring the importance and understanding of Statistics at school for 30 years.

Jane came to the Australian National University on a Fulbright Scholarship from the University of Oklahoma, later working at the ANU as a Research Assistant for Professor Bernhard Neumann.

At the University of Tasmania she began as a tutor in the Mathematics Department. During her time there she completed a PhD in Mathematics Education and joined the Faculty of Education in 1985. She has taught many different courses in Mathematics and Mathematics education for primary, middle-school and high-school preservice teachers, as well as Masters courses for inservice teachers.

She has supervised 11 PhD students to completion, been involved in 20 professional development programs and consultancies for teachers and education systems, and been a Chief Investigator on 20 large or small research projects funded by the Australian Research Council.

### Keynote address: **The Practice of Statistics at school: What does it look like in the classroom?**

This talk will include a brief history of statistics at school, what we mean by the Practice of Statistics at this level, and examples of activities introduced in Grades 3, 4, 5 and 6. Because context is essential to statistical investigations, we will look at manufacturing a product by hand and by machine, launching and improving catapults, answering a survey to decide if Australian students are environmentally friendly and challenging a claim in the media that brown-eyed people have faster reaction times than those with eyes of other colours.

### **WORKSHOPS: current confirmed presenters**

Amie Albrecht	The Game of SET
Jane Watson	Making Meaningful Statistical Decisions without $p$ -values
Chris Wetherell	When is a Square a Triangle?
Mat Skoss	Working Like a Mathematician
Greg Clarke	Using Geogebra in the Teaching and Learning of Mathematics – Patterns, Art and Maths
Mike Clapper	1. So the Answer is an Integer 2. What If? . . . the Questioning Classroom
Ilyse Resnick	Exploring How Spatial Reasoning Supports Maths Learning
Anna Williams & Peter Hughes	Engaging Teachers and Families to Enhance Student Learning
Paul Kruger, Sonali Kansal, Nicole Ptycia	A Community of Practice: Sharing our Journey
Paul Turner & Ed Staples	Puzzles In the Classroom
Ed Staples	Quadratic Equations and the Carlyle Circle
Brendon Jones	Getting the Most Out of Student Data
Steve Thornton	Lessons Learned in Japan
Alice Richardson	Time Series & Statistics
Cassandra Lowry	Making it Stick: Maximising Learning through Varied Instruction
Sue Wilson	Maths Anxiety
Brian Lannen	The Most of Dynamic Geometry for solving Optimisation Problems with and without Calculus
Jeremy Smith	Optimising for Homes – Engineers Without Borders Floating Housing Workshop.
Ralph Bucholtz	Some Personal Examples of Optimisation in Pure and Applied Mathematics

AND MORE TO COME . . .