

MANSW CONFERENCE

30 September, 1-2 October 2007

PRESENTERS in alphabetical order

Karen Ahearn	Primary 3-6	Fractions and decimals: what can they really do?	An increased focus on fractions and decimals instigated by the 2002 NSW Mathematics Syllabus provided students with greater opportunity to explore these content domains. However, much of the mathematical reasoning afforded by student exploration of fractional concepts has been limited to parts of a whole and parts of a collection. This presentation explores the ability of primary students to develop deep understanding of other constructs associated with fractions and decimals through the implementation of problem solving strategies. In particular, the use of diagrammatic representations and student reasoning of rate/ratio concepts will be explored. Student work samples will be presented.
Karen Ahearn Georgina Havadjia	Primary K-6	Looking deeper, probing for understanding	As teachers, we look to motivate in our students a sense of engagement in mathematical activity to facilitate meaningful understanding. However, what assessment approaches can be undertaken prior to the commencement of new explorations to ensure that each student's level of current understanding supports further exploration of a concept across particular content domains. This workshop will engage participants in a number of informal assessment tasks which enable teachers to identify areas for both revisiting and development. A strong link to assessment of working mathematically outcomes through content strands will be explored.
Judy Anderson Katie Patterson	Secondary 7-10	Practical ideas for promoting mathematics at school	This workshop will provide practical teaching ideas to promote mathematics in your school in your school on Pie Day, and on National Mathematics Day, as well as during National Literacy and Numeracy Week. We encourage participants to bring along their ideas to share.
Richard Andrew	Secondary 7-12	Investigating Mathematics with Graphics Calculators (General Mathematics mainly)	I believe there are two distinct stages teachers move through when first teaching with Graphics Calculators: 1. Learning to 'drive' Here teachers are on a steep learning curve and hence tend to stick to using Graphics Calculators to answer questions. 2. Investigating with Graphics Calculators ... only when used to inquire, inspect and investigate does the full potential of teaching with Graphics Calculators come to the fore. Algebraic Modeling will be a strong focus in this session. The activities will be geared towards General Mathematics but also have relevance to 7 - 10.
Richard Andrew	Secondary 7-12	Graphics Calculators - The Beginners Journey (7 - 12)	This will be an easy-to-follow beginner's 'button pressing' session. I will cater for both absolute beginners AND teachers who have a basic understanding of how to use them. NOTE: If you a relatively confident user this session will be too basic for you! (The workshop 'Investigating Mathematics with Graphics Calculator is for you!'). We will cover both 'How to use it' and issues in regard tot he decisions that need to be make when considering Graphics Calculators. The modes to be covered will be STAT, TABLE & GRAPH

Richard Andrew	Primary 6 & Secondary 7-12	Teaching conceptual Mathematics	<p>How do we enable students to understand mathematics conceptually? If you suspect there must be a more effective way to teaching mathematics than the traditional 'formula-based' approach then this workshop is for you. One hour is very little time to tackle this huge topic but we will certainly make in-roads in this session. Materials presented will be offered as handouts for participants.</p> <p><i>NOTE: This session is a snapshot from two full-day courses run through Teacher Training Australia which cover this topic in great depth.</i></p>
Janine Angove	Secondary 7-10	Working mathematically with HOTmaths	<p>This workshop will look at open tasks and practical activities from HOTmaths and explore how they can be used in the classroom, with and without technology. Many classrooms have limited access to technology, so most online resources are of little use. However the flexible nature of the HOTmaths Learning System allows for a wide range of uses in your classroom. Participants will receive a variety of working mathematically activities that they will be entitle to use in their classrooms. They will also learn about free resources offered by HOTmaths for all students and teachers.</p>
Stephen Arnold	Secondary 7-12	Technology-rich approach to algebraic modelling brief summary:	<p>The wonderful technological tools now available for the teaching and learning of mathematics at all levels need to be complemented by equally rich questions and tasks that offer an algebraic experience which is significant to students, and equally rich mathematically. This session explores some suitable questions which can bring your mathematics classroom to life!</p>
Catherine Attard	Primary 5-6 & Secondary 7-8	Motivation and engagement in middle years 5 - 8 mathematics	<p>An interactive session that will focus on motivation and engagement in mathematics during the middle years of schooling in Australia. Identification of disengaged and unmotivated learners and strategies to deal with such students will be discussed along with findings from current research.</p>
Dawn Bartlett	Secondary 7-12	A Tale of Two Journeys	<p>Journey 1: I was fortunate to embark on a study tour of the UK to visit schools, attend conferences and talk with educators about practices and activities for engaging students in mathematics. In this workshop, there will be opportunities to engage in some of the activities and share some of the experiences.</p> <p>Journey 2: Unfortunately, I also had a professionally disturbing journey of engaging with schools in a testing system where results from testing programs are public. Some time will be devoted to this cautionary tale that has implications for all of us.</p>
Russell Brown	Secondary 11-12	Probability using technology can be fun	<p>Probability can be made interesting and accessible to many students using technology and its ability to generate random sequences, animate simulations and graph distributions. Handheld technology (TI-84Plus) will be used in this hands on session but many of the ideas are transferable to other formats. Because of the nature of using handheld random generation such simulations provide unique data sets to real life problems and are student centered. How many times on average do you need to go to Maccas to get all seven cartoon characters? How many penalty goals can you expect? Look at these and more.</p>

Douglas Butler	Secondary 11-12 & Post-secondary	Pushing the boundaries with Autograph	<p>This will be your chance to see how the more advanced mathematicians can extend their exploration of the subject , using the latest incarnation of Autograph 3, led by the Author from the Old Country!</p> <p>Whether it's on the syllabus or not, this is about motivation, and the excitement of visualising new concepts in probability, statistics, and coordinate geometry in 2D and 3D. Autograph is in wide use in the UK, so this is also a great chance to find out what all the fuss is about! <i>There are lots of 3-minute tutorials on www.autograph-maths.com</i></p>
Douglas Butler	Secondary 7-10 & Post-secondary	Making the new MS Office 2007 Mathematically Friendly	<p>Office 2007 has a new, powerful interface, but underneath it is much the same. This session will guide you through the new ways into the familiar tasks in Word and Excel. In particular, in Word: how to create handsome diagrams (remember there is now no Drawing toolbar!) and expressions (using Unicode characters and the new, fancy 'Equation builder'), and how to find old faithfuls that are now a bit buried, such as the indispensable 'Autocorrect'; and in Excel how to find the even more buried, but also indispensable, slider-bar. <i>Lots of relevant files on www.tsm-resources.com</i></p>
Douglas Butler	Secondary 7-12	Fun with Autograph for the youngsters	<p>This will be chance to try out some lesson plans for the younger mathematicians, using the latest incarnation of Autograph 3, led by the Author from the Old Country! You will be able to see how much fun they can have exploring transformations in 2D and 3D (including making a simple space-ship and modelling the opening sequence to Star Trek!), fitting graphs to photos of familiar objects, finding new ways to discover the quadratic, and magically changing huge datasets into beautiful statistical diagrams, etc. <i>There are lots of 3-minute tutorials on www.autograph-maths.com</i></p>
Douglas Butler	Secondary 7-12 & Post-secondary	Did you say YouTube? - Yes: get that ban turned off!	<p>This presentation will argue that an internet-connected and projected computer in the classroom is now a tool of the mathematics teacher's trade, which somehow needs to become a priority in the planning of school budgets. Just look what you can slip into a lesson: a huge choice of startlingly effective Java applets, fantastically pertinent short videos on YouTube (yes: get that ban taken off!), data from all over the World, snippets of mathematics history, geometrical buildings from Google Earth.... Enough to make me wish I was 25 again and starting all over! <i>[All these links can be found on www.tsm-resources.com]</i>.</p>
Emma Campbell	Primary K-6 & Secondary 7-12	How to make the most of MS Word Part 1	<p>Learn how to use columns, tables, breaks, tabs, outline numbering and Equation Editor/MathType efficiently. Save time by learning how to customise toolbars and create your shortcut keys and autocorrections. You will be surprised by how easy typing worksheets and assessments can be! <i>(Note: Using the Drawing Toolbar in Word will be presented in Part 2 in the Computer Lab).</i></p>
Emma Campbell	Primary K-6 & Secondary 7-12	How to make the most of MS Word Part 2 (diagrams)	<p>Learn how to use the grid, nudge objects, format autoshapes, change the default formats, group and order objects. You will see how to use the freeform tool and the "edit points" function. Practise applying transformations, creating similar figures, drawing regular polygons and working with textboxes. Tips for drawing and labelling parallel lines, special quadrilaterals, arcs and sectors, pyramids and cylinders, number lines and number planes. You will also learn how to turn that "drawing canvas" off! Bring your own laptop if you wish.</p>

Emma Campbell	Secondary 7-10	Programming years 7-10 with the "new" syllabus	One school's approach to programming in Years 7 to 10. Over the past four years our program for Years 7 to 10 has continued to evolve as we grappled with the "New" Syllabus. We have tried various formats, sequences and types of assessment to incorporate the continuum of learning. We have adapted to feedback from colleagues and finally this year expanded the suggested learning experiences to include hyperlinks to numerous worksheets and websites. Participants are welcome to share their programming experiences. Of course, there is always more to do . . .
Michael Cavanagh	Secondary 7-10	Area measurement in year 7	I will report on a small research study that investigated the understanding of areas of rectangles, triangles and parallelograms by a group of year 7 students. Ideas for sequencing the teaching of these topics will be discussed.
Anita Chin	Primary 4-6 & Secondary 7-8 (Middle school)	A hands-on approach to fractions and decimals	This hands-on workshop will provide practical ideas for teaching and assessing fractions and decimals in a mixed ability classroom. Activities to support children thinking and working mathematically will include the use of paperclip number lines, hundreds chars, visual aids and card matching. Participants will see both teacher-led whole-class activities, and student-centred small-group activities. The workshop will demonstrate the use of explicit teacher questioning as well as practical classroom management ideas that teachers can experience one day and use the next. Black line masters will be included.
Anita Chin	Primary 4-6 & Secondary 7-8 (Middle school)	Exploring number relationships: From patterns to algebra	This hands-on workshop will have an emphasis on number patterns and number relationships to show how pre-algebra concepts are developed for Early Stage 1 to algebra concepts in Stage 4. The focus will be on open-ended questions to promote working mathematically. Participants will engage in practical activities which support the use of appropriate mathematical language in a mixed ability classroom. The workshop will demonstrate classroom management ideas that teachers can experience one day and use the next. Black line masters will be included.
Marta Chylewski Shari Harrington	Primary K-2	You can Know how to develop young Mathematicians 2	Are you looking for ... <ul style="list-style-type: none"> * Ways to differentiate the needs of all students in Mathematics? * Strategies to enthuse your students about learning in Mathematics? * A way to create a safe learning environment where your students develop a positive relationship with Mathematics? * An approach to Mathematics that does not involve worksheets? * A way to see your students record their mathematical thinking? * Methods of assessing and tracking students in Mathematics? * "Do we really have to pack up now?" instead of "I've already finished". <p>This session will show you what we developed at our school.</p>
Baden Colliss Jacqui Lyon	Secondary 7-10	Developing rubric based assessment tasks	This workshop is designed to give teachers an idea of one school's approach to broadening assessment strategies, what worked, what did not, and what they are doing to improve their tasks. You will receive some examples of tasks and rubrics, see case studies in student responses and start yourself on the road to some non-traditional test based assessment. If you have trouble motivating students to study for traditional test based assessment, this session should interest you.
Nick Connolly	Primary K-6 & Secondary 7-12	Building a glossary of school mathematics	An introduction to a glossary of words and phrases used in school level mathematics in Australia. Who says what, when and where.

Tobias Cooper	Secondary 11-12	Essential CAS software for secondary mathematics teachers	CAS (Computer Algebra System) is here to stay. It will become part of the curriculum as it has in other states. It is easy to use and a very useful tool for all secondary maths teachers. You will learn how to simplify trig identities, differentiate, integrate, factorise, expand binomials and more - all in an instant. We will look at three pieces of software - two of which are free.
Tobias Cooper	Secondary 7-12	GeoGebra - The next big thing in mathematics software	GeoGebra is free, multi-platform (works on mac and PC) dynamic geometry software for schools that joins geometry, algebra and calculus. Every file created can be saved as a dynamic interactive web page. This is an essential tool for all mathematics departments. Come and be amazed.
Tobias Cooper	Secondary 7-12	FX Draw 3 - An essential graphing and drawing package for maths teachers	Fx Draw 3 can draw or graph virtually anything a mathematics teacher can think of. Histograms, box and whisker plots, functions with point discontinuity, circle geometry diagrams and more. It can write equations like Mathtype and shade regions under and between curves. All diagrams can be exported to Word and edited within Word. Come and play.
Mary Coupland	Secondary 7-12	Looking over the fence - mathematics in the post-compulsory years in other states and countries	This session summarises the author's report for the NSW Board of Studies, "A critical analysis of selected Australian and international mathematics syllabuses for the post-compulsory years of secondary schooling". Comparisons are useful at this stage of syllabus development in NSW.
Bev Dunbar Jan Hart	Primary 5-6 & Secondary 7-8 (Middle school)	Making sense in numeracy: the years 5-8 mathematics project in action	How can we help students make sense of their world? Hear the results from schools participating in the years 5-8 mathematics project. Observe students explaining how they arrived at their solutions to a variety of problems. Identify and discuss misconceptions. Explore mental strategies to improve student understanding. Learn how students can make better sense of the mathematics we provide for them.
Elizabeth Ferme	Primary 6 & Secondary 7-10	Learning journals	Learning journals are a consolidation tool. This open-ended task can be used in lieu of other assessment items, homework in particular. Flexible structure means greater student engagement. Students write "their own personalised text book" and reflect on their learning. Experienced suggests it is an extremely valuable learning and assessment tool, very well received by parents and students.
Peter Fox	Secondary 11-12	Exponentially exciting	Any excuse to eat chocolate, that's my motto. M & M's can be used to teach students about exponential growth or decay (of the incisors). A number of modelling activities will be investigated followed by an exploration of Euler's number. Participants will participate in a variety of techniques that I have used in the teaching and learning of exponential functions.
Peter Fox	Secondary 7-12	Using origami and technology to explore mathematics	Paper folding is fun, easy and accessible and can be used to explore mathematics. Dynamic geometry can help students explore patterns once the paper folding is done. A range of simple tasks will be explored that will demonstrate how to challenge students thinking and encourage them to make conjectures.
Peter Fox	Secondary 7-12	Having fun with calculator robots	Participants will use a calculator, a robot and some mathematical tools to solve a simple challenge. This is a hands on workshop designed to highlight how mathematics can be made both fun and challenging. Prizes will be awarded to the best team.

Kristy Goodwin Kate Highfield	Primary K-2	Digital Tools and Technology in the K-2 Mathematics Classroom	This workshop will showcase how various digital technologies can be integrated into K-2 mathematics classrooms to provide authentic learning experiences. Digital learning tools such as interactive whiteboards, digital learning objects and simple robotics will be demonstrated to exemplify how classroom teachers can use these tools to facilitate young students' learning of mathematical concepts and skills related to counting, position, direction, angles and measurement. This workshop will have a practical component, enabling participants to develop their skills and ability to integrate technology into their current mathematics program.
Jim Green	Secondary 7-12	Use of technology in Mathematics Classrooms	The findings of a study tour to investigate the use of technology in Mathematics classrooms in South East Asia will be discussed. The tour included conferences of mathematics teachers in Perth and Hong Kong as well as visits to schools in Singapore, Vietnam and Hong Kong. The key elements of the tour were: <ul style="list-style-type: none"> • to examine how ICT is being integrated into programs and more so how teachers are using technology in the mathematics classroom • to engage in discussion about current trends in teaching Mathematics using technology and • to identify recent research findings that supports the use of technology in Mathematics. Jim will discuss how the use of technology in Australia compares with that in South East Asia.
Tal Greengard	Secondary 9-10	Creative use of technology for Stage 4 students	We will explore some interactive and creative mathematics activities for students in Stage 4. Each activity involves the use of technology, group work and involves some creativity on the part of students.
Margaret Grove	Secondary 7-10	Introducing algebra - demystifying pronumerals	Some examples of practical problem solving activities that introduce algebra in a non-threatening way. These show algebra in its context and give students a meaningful introduction to pronumerals.
Ros Hamblyn	Secondary 7-12	Actions speak louder than words	A variety of ideas to help students in Years 7-12 to better understand what they are being taught. Ideas will include simple items that can be used as visual aids and motivating students by getting them actively involved in the lesson.
Boris Handal	Secondary 7-10	CLI maths online resources	In this hands-on workshop participants will go through the following six interactive resources produced at the NSW Centre for Learning Innovation: <ul style="list-style-type: none"> • Timeworks (Stages 3 to 4) • Race track maths (Stages 3 and 4) • Straight lines (Stage 4 and 5) • Parabolas (Stage 5) • Binomial theorem and binomial probability (Extension, Stage 6) • Curve sketching (Extension 1 and 2, Stage 6)
Anthony Harradine	Secondary 7-12	STATISTICS - just how hard might it be to teach/learn?	It has been suggested that the new Stage 6 courses might include more than just some simple descriptive Statistics: e.g. Normal Distribution, Central Limit Theorem, Confidence Intervals. This workshop will introduce you to these concepts using 'layman' contexts that are now accepted as valuable assistants in the teaching and learning of these concepts. Dynamic visual representations will be used to bring these concepts alive and link them to the world in which they are so often used. It is hoped you will leave well informed so you can consider the inclusion (or otherwise) of this 'new' content.

Anthony Harradine	Secondary 7-12	Bathed in Light	Sports fields, tall poles and lights return unexpected and truly beautiful mathematical results that can be described with symbols, explored with technology and then explained with 'old skool' calculus. This problem is the perfect way to revise many skills (inverse square laws, differentiation, polynomial factorisation to name three).
Anthony Harradine	Secondary 7-12	A Pythagorean hunt	Many of us teach the Theorem of Pythagoras, but do we have the students using it when 'working mathematically'? Hunting for Pythagorean Triads returns the most amazing patterns and leads students to employing all of the middle school algebra they spend so much time perfecting. This activity replicates the work of mathematicians - but only requires school level skills - you will be surprised at the outcomes.
Janet Hunter	Secondary 7-12 and Post-secondary	Fibonacci, the Golden Ratio and Other Curiosities	In this session, various activities based on the Fibonacci Sequence and its relationship to the Golden Ratio and other curiosities, such as Chaos Theory and Penrose Tiles, will be presented. Suitable for mathematically talented and interested students from Years 7 to 12, including Extension 2. A discussion about catering to 'gifted' students may ensue.
Tim Hildebrandt	Secondary 7-12	What does quality assessment look like in mathematics?	This session will examine the features of quality pedagogy and assessment from various models including the NSW DET Quality Teaching Framework with a focus on what "Quality Assessment" looks like in Mathematics. The focus will be on tasks for Years 7 – 10 as well as General Mathematics in Years 11 and 12. Sample assessment tasks and an assessment guide and help sheet will be provided for participants to take back to their schools <i>Tim is Former Head of Mathematics, St. Leo's Catholic College Wahroonga</i>
Karen Hughes	Primary 6 & Secondary 7-8 (Middle school)	Fleximaths - a new resource for middle school learning	A lively look at a flexible new resource for teachers of Years 6, 7 & 8 content. Designed for the current NSW syllabus, each 'write on' photocopiable lesson contains further challenge and enrichment, homework and fully worked solutions. Thorough revision and a selection of tests for each topic are included. Sample resources will be provided for participants.
Gary Hughes	Secondary 7-12	Open source maths software	There is a lot of useful software that is available under the GPL (ie freely distributable) for mathematics. This includes symbolic algebra systems like Maxima (on which Maple is based), geometry software like Dr Geo, function and relation plotting, and spreadsheets. Most commercial products have a GPL equivalent - they may not have quite the polish but they can do the same job and it is quite legal to give students a copy.
Rene Hutchins	Secondary 7-12	Percentages in today's world	An introduction to percentages used in the real world, with particular relevance to emerging studies in medicine and new therapies. Biostatistics as a tool for investigating and analysing data sets collected from patients or subjects are used to make associations with causality in disease and to diagnosed incidence and prevalence of disease. An illustration of using 2x2 tables as used in the General Mathematics course will be used, as well as other models.
Ian Iredale Rachael Mowe	Primary 3-6 & Secondary 7-12	X marks the spot!	A follow up presentation on last year's "New Ways to Think Spatially". Innovative methods of teaching the space and measurement strands of the curriculum will be explored. After the presentation, a demonstration of these methods will be given on the lawn at the rear of the club.

David Keanan-Brown	Secondary 7-12	Authentic Plane Geometry Lessons	In this session you will see how to design your own authentic Plane Geometry lessons in the context of Coastal Navigation. Your students will be engaged in geometry, reinforcing their knowledge of geometrical properties as they learn a little about navigation, they will also be upskilled in the use of your preferred dynamic geometry software if they have access to a computer lab.
Marian Kemp Barry Kissane	Secondary 11-12	Exploring statistics and probability distributions on a graphics calculator	This hands-on workshop will introduce teachers to the use of the Casio fx-9860G AU graphics calculator as a tool for learning about statistics and probability distributions. Students can sample from data sets, investigate data sets by summarising the data numerically, use box and whisker plots to make comparisons, analyse bivariate data and explore the effects of changing bin values for histograms. Normal and binomial distributions are easily accessed. This workshop will include a range of activities designed to illustrate the potential of the calculator to aid student learning. No previous experience with this graphics calculator will be assumed.
Barry Kissane Marian Kemp	Secondary 7-12	Learning from spatial objects on a calculator	In this hands-on session, we will explore some of the ways in which the geometry mode of the new Casio fx-9860G AU graphics calculator can support student learning, through the use of various kinds of spatial objects. Among other things, we will consider geometric figures; constructions; measurements of length, area and angle; vectors; transformations and animations, to identify opportunities for student learning. No previous experience with this graphics calculator will be assumed.
Barry Kissane	Secondary 7-12	Spreadsheets on a calculator	Over recent years, spreadsheets have been increasingly recognised as having a role in teaching and learning mathematics, but have continued to suffer the limitation of requiring access to computers. In this hands-on workshop, we will use the spreadsheet module on the new Casio fx-9860G AU graphics calculator to explore the opportunities it offers for both students and teachers. While extensive spreadsheet experience will not be assumed, those familiar with spreadsheets may see this session as a chance to see which of their teaching ideas can be translated to the hand-held context, while spreadsheet beginners are also welcome. No previous experience with this graphics calculator will be assumed.
Barry Kissane	Secondary 7-12	Solving equations with calculators	Equations are of fundamental importance in school algebra curricula, and the focus of this session is on ways in which they can be addressed and explored through technology, particularly a graphics calculator. We will use the Casio fx-9860G AU graphics calculator to explore a variety of ways in which equations can be conceptualised (and thus solved). The significance of numerical and approximate solution of equations will be discussed, in the light of long-standing traditions in school mathematics for symbolic and exact solutions of equations to be emphasised. No experience with this (or other) graphics calculators will be assumed.

Valerie Larkin	Secondary 7-10	Tweaking the Year 7 program	Practical methods, in number and geometry, to incorporate the theme: Identity and Difference into mathematics. This is the theme for year 7 middle school in English, HSIE & RE and we have developed activities to extend it into mathematics.
Edward Lewis	Primary K-6 & Secondary 7-8	Relevant, unusual and stimulating? Contextual Mathematics activities for the K-8 classroom	The grounding of Mathematics in everyday contexts in order to stimulate students' interests and develop knowledge, skills and understanding is an accepted feature of modern curricula. The challenge for busy teachers is in the planning and implementing of Contextual Mathematics units. Which topics are capable of capturing the imagination of children and teachers? Ed Lewis and Jim Grant will present a series of student support materials they have developed and will facilitate discussions regarding how contextual approaches can be implemented.
John Ley	Secondary 7-10 & Secondary 11-12	Integrating the teaching of spreadsheets into mathematics-enhancing the learning of mathematics	The easy-to-use student workbook and CD ROM developed at the speaker's school shows how spreadsheet skills are explicitly taught in a self paced, independent, motivated, learning environment. Covers all BOS stage 5 requirements. Free copies! * See how spreadsheets enhance the learning of mathematics. * Experience the student workbook and CD ROM * Understand that students develop spreadsheet skills enabling them to write their own spreadsheets to investigate mathematical problems. * Realise that no teacher spreadsheet skills are required to use the program with students as the CD ROM demonstrates all skills required and the solutions to all activities.!
Deborah Liang	Secondary 7-10	Using ICTs, websites and Mathletics to teach stage 4 mathematics	Ever been to a PD with good ICT ideas but not had time to implement them? This presentation describes the QTP project at my school that involved investigation and then implementation of good ICT resources for algebra, solving equations, geometry and percentages in stage 4 mathematics. Resources used included computer-based balance scales from the collection of the National Library of Virtual Manipulatives and revision quizzes on Quia site. Access to resources come via a specially designed Moodle site. Suggestions will be made on how these resources could be implemented and a list of some websites and other resources will be provided.
Sharon London	Secondary 7-9	HOTmaths - Let me count the ways	Discover a wealth of investigations and interactive resources on the HOTmaths website and find out how teachers are using them as part of your normal teaching. For teachers, students and parents - practical, informative, motivational and effective. Curriculum-based HOTmaths includes working mathematically investigations, animations, interactive activities, drill and practice, computer-marked assessment ideas and immediate feedback and progress reports.
Rod Lyon	Secondary 7-12	Marking the HSC General Maths	Have you ever wondered about the mysterious world of HSC marking? I will talk about some of the basic structures involved in the HSC marking process and then we can have a trial run setting up a marking scheme and do some practice marking. A worthwhile exercise if you are thinking of applying or just want the professional discussion.

Peter Maher	Primary K-6	Making mental arithmetic mighty	This workshop will focus on the importance of creating in schools, a developmental, K-6 mental arithmetic program. This highly practical session will present a series of games and activities designed to demonstrate the patterns and structure of number. Concepts covered will include tests for divisibility, counting, times tables and the four operations. Attention will also be directed to a highly successful resource which achieves the goals set out above.
Anthony Mahoney	Secondary 7-12	Practical ideas for teaching number and algebra	A range of practical ideas for teaching number and algebra will be presented. Each activity is designed to motivate students to enjoy the study of mathematics.
Anthony Mahoney	Secondary 7-12	Interesting Problems to motivate your students in Mathematics	A range of interesting problems that can be easily used in your classroom to engage students in mathematic thinking will be explored in this presentation.
Karen McDaid	Primary 5-6 & Secondary 7-8	How many? How far? how long? How much?	This is an interactive workshop that involves contextual as well a conceptual ideas focusing on the strand of measurement. The activities look at the importance of history in the concept of measurement and focus on developing the skills of estimation and application so that knowledge can be applied in a variety of contexts.
Neil McDermott	Primary K-6	Teaching gifted children in a regular mathematics class	In the session, I will be discussing and workshopping tasks that are appropriate for gifted students in the regular classroom. I will share resources. The workshop will be hands-on and practical. There will be a sharing of ideas.
Heather McMaster Michael Cavanagh	Secondary 7-10	Introducing Wingeom	<p>“Wingeom” is a dynamic geometry programs that can be accessed from the internet by anyone for free. In response to teachers’ requests over several years, it has been improved, added to and made more user-friendly. It is now capable of demonstrating every geometric and measurement concept in the syllabus.</p> <p>In this workshop you will be given instructions on how to get started with Wingeom so you can then proceed at your own pace on a series of activities. You will also be given a brief demonstration on how “Wingeom” can be used in your teaching.</p>
Michael Mitchelmore Heather McMaster	Secondary 7-10	Working mathematically with patterns & algebra	<p>Algebra is often seen as a disconnected set of abstract rules with no meaning or purpose. In fact, these rules just summarise arithmetic ideas that students are already familiar with. Just as the arithmetic ideas allow them to carry out numerical calculations more easily, algebraic manipulations help to solve problems more easily.</p> <p>Last year, the presenters demonstrated how students could learn to use algebraic generalisations to summarise and investigate relationships. They have now constructed a variety of activities directed towards generalising arithmetic patterns into meaningful algebraic rules that can be used to simplify expressions.</p>
Michael Mitchelmore Sharon London Heather McMaster	Secondary 7-10	Working mathematically in an online world	The Centre for Research in Mathematics & Science Education (CRiMSE) at Macquarie University is investigating teachers' use of HOTmaths, a new internet-based mathematics learning system which combines the best features of existing software with an assessment and reporting system. Over 700 Year 7 students from 4 public high schools in Sydney and Dubbo are involved. Learn how teachers are overcoming the hurdles of implementing the technology and students are learning to work more mathematically.
Zeffie Nicholas	Primary 5-6 & Secondary 7-8 (Middle school)	Numeracy across the curriculum	This workshop will scaffold and model ways that numeracy can be integrated across the curriculum. The workshop will provide practical activities that the link numeracy to other areas of learning.

Mark O'Brien	Secondary 7-10	Exploring and applying probability simulations	<p>This session will be based around activities and applications from an Integrated Maths Module. It will look at both activities to immerse students in and explore simulations, as well as applications to allow students to apply the concepts in non-routine, contextual situations.</p> <p>The aims of the session will be twofold:</p> <ul style="list-style-type: none">* To familiarise participants with a resource they can use when teaching chance processes* and also to promote the ideas of immersion of students into their learning and the subsequent application of understandings.
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Mark O'Brien	Secondary 7-10	Cooperative learning in the maths classroom	<p>“Research on how people learn has suggested that learning is a social process and that cooperative learning activities are essential if students are able to construct their own knowledge”: Alice F Artzt & Claire M Newman</p> <p>“Independence and collaboration: Learning experiences should encourage students to learn both independently and from and with others”: Curriculum Framework Learning & Teaching Principles</p> <p>Mathematics teachers we are not traditionally highly skilled in allowing students to work cooperatively. However, there is a lot of information available on both the how and why of cooperative learning and this workshop aims to impart some of that information and also some of the presenter’s experience from the classroom</p>
Paul Patterson	All levels	Experience the Interactive Whiteboard	<p>A hands-on session where you can touch and try out the Promethean Interactive Whiteboard with someone to help you and show you how it works.</p> <p>See how this technology can improve the learning environment.</p>
Paul Patterson	Secondary 7-12	The Electronic Whiteboard in your classroom	<p>See how this technology can improve the learning environment.</p> <p>In addition to learning about how the hardware works and what it could bring to your teaching you will also see some of the software and expansive resources provided by Promethean.</p>
Zdena Pethers	Primary 5-6 & Secondary 7-8	Practical numeracy strategies in the middle years classroom	<p>‘When it’s fun you learn!’ This workshop will explore practical, enjoyable numeracy activities for stages 3 and 4, that are designed to engage students with different learning styles and ability levels.</p> <p>The activities will demonstrate how quality teaching principles help support the acquisition of numeracy skills, and enhance understanding of mathematical concepts through application to other key learning areas</p>
Cassandra Portelli Sue McGibbon	Secondary 7-10	Spreadsheets and the CASIO FX 9860 G AU	<p>Introducing the spreadsheeting capabilities of this graphics calculator, and lesson notes for some activities we have used with our classes. If you do not have enough access to computing labs, here is another way to cover your ICT responsibilities. At the end of this session there should be some time to share your valuable teaching ideas.</p>
Paul Rehill	Secondary 7-10	Interactive maths series software training session	<p>In this workshop, you will learn about and explore the features of G S Rehill’s Year 7-10 Interactive Maths (Second Edition) software in terms of the NSW Year 7-10 Syllabus:</p> <ol style="list-style-type: none"> 1. The 1222 interactive exercises accessible by students. 2. Using performance analysis tools to monitor student achievement and identify strengths and weaknesses to accelerate learning 3. The randomised worksheet and solution sheet generator for 1222 topics. 4. Creating reusable Revision Templates to form new miscellaneous exercises, worksheets or tests for students. 4. Creating reusable Revision Templates to form new miscellaneous exercises, worksheets or tests. 5. Exploring the software series quickly and efficiently as a teacher. <p><i>Paul is the author and marketer of Interactive Maths</i></p>
Jon Roberts	Secondary 11-12	Trigonometric functions and real world data	<p>Use the TI-83/4Plus to find out how to enrich your students' experiences of the functions from the unit circle through the use of real world data, including sets from data-logging and Internet research.</p>

Jon Roberts	Secondary 11-12	A context for curved areas	See how the TI-83/4Plus provides an interesting use of trigonometric modelling to provide insights into period, amplitude and range and it can be a stepping stone to integration. In addition we discover that Melbourne gets less sunshine than the Mawson Research Station in Antarctica, despite the latter having some time with zero sunshine. This context for curved areas is best placed in a Year 11 Trigonometry course. The approach uses either handheld or desktop technology. Both methods will be demonstrated.
Scott Rodham	Secondary 7-12	1 thing about Mathematics	Over the past 42 years of teaching I have acquired many and different methods of presenting a wide range of topics which make the learning of Maths fun. I would like to share selections of topics from old text books which are still relevant in today's syllabus in the areas of Number, Algebra, Geometry and Trigonometry along with a demonstration of some teaching aids and very special activities. You will go away with great ideas to implement straight away in your own classroom and a set of notes you can use.
Robert Rowland	Secondary 11-12	General Maths using the Casio fx-9860G AU	The latest Casio graphics calculator the fx-9860G AU has several features not available on earlier models. In this session we will be working through how the calculator can be used with general Maths classes enabling students to quickly access statistical, graphical, algebraic and financial functions. The newest function on the model calculator is the S-SHT (spreadsheet) function. For those who have difficulty accessing computers at their school we will be looking at how the calculator can be used to complete many of the computer applications within the course.
Peter Rundle	Secondary 7-12	A Maths Department Faculty Handbook	In today's busy teaching world, it can be very hard to keep track of who is meant to do what, when and how? By bringing everything together in one place, then everyone in your department can know what they need to do and when/how they need to be doing it!
Pep Serow Michaela Inglis	Secondary 11-12	Dynamic geometry software templates: developing understanding of circle geometry theorems with a time-saving bonus	Circle Geometry, a senior mathematics topic, is often regarded as time-consuming and associated relational concepts difficult for students to grasp. Participants will explore the effectiveness of teacher-designed dynamic geometry software templates to maintain student ownership of circle geometry theorems. The teaching sequence is imbedded within the van Hiele Teaching Phases. The developmental framework explored in the workshop is transferable to all content areas of the primary and secondary mathematics syllabi.
Karen Skilling	Primary 5-6 & Secondary 7-10	Reflecting on mathematical understandings	This paper describes an approach that encourages middle school students to reflect on their mathematical knowledge and the processes by which they learn best. The approach used incorporates and develops reflective skills and devices supported by explicit adult guidance. The students are introduced to the processes of reflection as they plan, prepare and teach a mathematics lesson to a younger class. Through these reflective experiences students examine their understandings of mathematical concepts and become aware of themselves as learners.

Ed Staples	Secondary 7-12	Concept exploration in mathematics using Spinnamaths	Spinnamaths is a collection of over 100 Excel spreadsheets prepared specifically for classroom use for years 9 to 12 in the secondary curriculum (www.spinnamaths.com.au). By using the sheets students can examine mathematical concepts dynamically. Rather than drawing static graphs of functions, spinners and scroll bars allow the user to vary function coefficients rapidly and see the effect on the graph. Tangents can roll along curves, sine and cosine waves can compress and extend, conic sections can be examined, polynomial functions can be sketched and varied, rectangles under curves can be drawn and, projectile and simple harmonic motion can be observed. No operating manuals and no technical knowledge is required. All that is needed is background in secondary mathematics teaching. If you haven't seen them before come along and discover the power for yourself.
Elizabeth Stone	Secondary 7-12 & primary teachers who draw diagrams to prepare worksheets or tests	Faster preparation of beautiful maths resources & tests (even for beginners)	Mathematical notation and diagrams are difficult and time-consuming to produce on computers. This session will introduce participants to FXDraw and FXEquation. Designed by teachers, these programs produce diagrams and mathematical notation in a fraction of time taken by comparable programs. They also work intuitively, eliminating the need to memorise complex commands. Diagrams and equations are embedded in Word documents and easily editable, and preparation time is drastically reduced. Best of all, the software is very affordable, both for individual teachers and schools, so that this is a realistic option. This session will suit those with basic IT skills, through to experienced users. Trial software to take away provided.
Paul Smith	Primary 4-6	Mathletics - Delivering individualised teaching to your class in an on-line environment.	<p>The modern classroom offers great opportunities to enhance learning outcomes through technology. Once the hardware is in place, the challenge remains to find content that has sound pedagogy, but importantly, engages and motivates students to learn.</p> <p>At 3PLearning, we create e-Learning resources that engage and motivate students to improve their results. This session will look at what e-learning offers teachers in the primary school. We will demonstrate how teachers can use technology and the data it provides to individualise learning and create an environment that drives improved results.</p>
Paul Smith	Secondary 7-8	Mathletics - Delivering individualised teaching to your class in an on-line environment.	<p>The modern classroom offers great opportunities to enhance learning outcomes through technology. Once the hardware is in place, the challenge remains to find content that has sound pedagogy, but importantly, engages and motivates students to learn.</p> <p>At 3PLearning, we create e-Learning resources that engage and motivate students to improve their results. This session will look at what e-learning offers teachers in early secondary school. We will demonstrate how teachers can use technology and the data it provides to individualise learning and create an environment that drives improved results.</p>
Patrick Sullivan	Secondary 7-12	Teaching geometry with masking tape	A hands on practical way to teach geometry using a roll of masking tape and lots of energy. This is putting a new twist on learning geometry and geometrical proofs.

Marye Taylor	Secondary 7-12	Average students can do deductive geometry well - how to make it happen	The presenter will illustrate a structured approach to facilitate the writing of deductive proofs in geometry by students. A method often used is to show students sample proofs but they need to see and work through a wide range of these in order to know how to approach their own. Presenting sample proofs often fails because it is difficult to maintain concentration for the time needed. Mrs Taylor will display a set of materials and describe methods which have helped her to shorten the time needed and which have better maintained the concentration of students. The aim is to give teachers of average to bright students of Mathematics in Years 9 to 12 additional ideas to teach geometry well.
Peter Taylor	Secondary 7-12	Methods of problem solving	In this talk I will give a classification of some methods of problem solving, some of which can be used in a variety of mathematical areas. I will illustrate some of these with questions taken from some recent competitions.
Sue Thomson	Secondary 11-12	Calculus and technology	In this workshop participants will look at some graphical approaches that assist students in understanding calculus concepts.
Sue Thomson	Secondary 7-12	Dynamic geometry	In this workshop participants will be exploring some classroom applications of the dynamic geometry menu on the Casio graphics calculator. Very limited graphics calculator skills will be assumed, but no previous experience with the geometry menu is required.
Sue Thomson	Secondary 7-12	Professional looking worksheets	In this practical session participants will learn how to incorporate graphs, data, instructions etc from their Casio graphics calculator screens into word documents.
Sue Thomson	Secondary 7-12	Thai food carving and geometry	If you have been looking for a real life application of geometrical language and basic concepts, with a cross curricula link, then this session is for you! Intending participants will find it useful to bring an apron and chopping board. Carving knives will be loaned to participants.
Steve Thornton Catherine Dobner	Secondary 7-10	Scaffolding problem solving in mathematics and science	The workshop will present the outcomes of an ASISTM funded project, Linking Literacy to Problem Solving in Maths and Science, conducted at MacKillop Catholic College and other schools in the ACT. The project developed an interactive website that enables students to practice and enhance their problem solving skills. The support that the students receive through the website is scaffolded – students can access simple hints such as rereading the question, highlighting key words then using key steps in the solution and diagrams. The interactive Website was developed to act on research conducted in the project schools that looked at how students solved problems. Participants will be able to try out the problems.
Brian Tickle	Primary K-6	A real hands-on approach to teaching place value	In this session teachers will observe and participate in activities designed to make the concept of place value visible and comprehensive. They will use the most powerful representation of ten that is well-known to all children. The manipulatives used in the session are designed to take students well beyond positional or linguistic understanding of place value, e.g. identifying columns - to a deep understanding of the concept of place value that will help them to develop strong number sense and efficient mental computation strategies.

Gerard Tuffield	Primary K-6	Consolidating mental computation strategies via games	This session involves participants in playing a selection of games from Brian Tickle's and James Burnett's Fundamental Series that can be used to consolidate some key mental strategies that assist students to compute. This session is very much 'hands-on'. Not only will the participants play the games, but they will also discuss ways to vary and extend the games to change mathematics.
Allan Turton	Primary K-6	Powerful number fact strategies	Number fact strategies are the first steps in developing all mental computation. This session will describe a four-step approach to teaching the basic addition, subtraction, multiplication and division facts. The approach is much more powerful than memorising 'tables'.
Allan Turton	Primary 3-6 & Secondary 7-10	Fantastic folding feats	This workshop will engage participants in activities to create familiar two-dimensional shapes by folding metric paper. The simple steps (easier than origami) yield some fascinating patterns and designs. Used in classrooms students learn about the properties of the shapes they are making and combining. Prepare to be amazed!
Nikky Vanderhout	Secondary 11-12	A positive approach to absolute value	This workshop is specifically for beginning teachers or teachers who are returning to teaching Extension 1 after some time. Participants will be given the opportunity to develop a sequence of lessons which begins with the concept of absolute value as a distance and progress through both algebraic and graphical considerations of more complex problems involving absolute value. Ultimately, some aspects of Extension 2 course will be addressed.
Katrina Watson	Secondary 7-12	Music and maths	Our workshop involves using music to teach mathematical concepts. This way of teaching appeals particularly to kinaesthetic and auditory learners. This workshop will teach you how to modify a song and use it to teach mathematical concepts. We have a lot of fun as a staff learning our performances and we hope you enjoy the show.
Jennifer Way Gary Halpin Chris Herbert	Primary 3-6	Teaching Fractions with Technology	Stage 3 teachers from two schools located in two distinct socio-economic areas have been collaborating to develop effective approaches to teaching key fractions concepts and processes, using current technology resources – the TI-15 calculator and digital learning objects (Le@rning Federation). The teachers will share what they have learned from the experience. The workshop includes the opportunity for participants to use (and keep) the TI-15s and discuss ways in which their own professional learning can be supported.
Garry Webb	Secondary 7-10	Determining School Certificate grades in Mathematics	2006 was the first year that all Year 10 Mathematics students were awarded grades using the same grade scale. What system did you use for determining School Certificate grades for all your Year 10 students? Did you find the Course Performance Descriptors useful? Did you use the work samples on the Board of Studies website? How did you ensure common standards across your 5.1, 5.2 and 5.3 classes? Did you give common exams? Did you use your trial School Certificate test as a 'moderator'? Are you confident your grades were consistent with other schools? This session will be an opportunity to reflect on the first year of implementation of the new system, to discuss different strategies with colleagues, and to look ahead to how processes can be refined this year.

Garry Webb	Secondary 11-12	Assessment in the new Stage 6 Mathematics courses	<p>What are the issues to be considered in developing the examination specifications and assessment requirements for the new Stage 6 Mathematics courses?</p> <p>What should the examination specifications specify? What should they say about the use of technology in the examinations? What should the examination papers be like? What sorts of items should be included in the examinations? Should the marks allocated to various topics be specified? What should the components for the school assessment be? Should the types of assessment tasks be specified? Should there be assessment of the Preliminary course in the HSC assessment program?</p> <p>This session will include discussion of these questions and the factors that are taken into account in determining the answers.</p>
Allan White Ly Soc Borey Borhan Shouk Omar Merheb Majed Kabbara	Primary 3-6	Boost students' mathematics learning through the use of interactive spreadsheets	Interactive spreadsheets can be given to your students to take home and use. This way you can Boost (By Out Of School Time) your students learning. Participants can play with and copy a collection of spreadsheets already designed by UWS students onto your pen drive. They may also like to be taught the fundamental skills to empower them to make their own.
Allan White	Primary 3-6 & Secondary 7-10 (Middle school)	What does NSW global education have to offer middle school mathematics classroom? Only the whole world	Participants will be given free resources and lists of sites where they can obtain further material suitable for the mathematics classroom. The process strand Working Mathematically and content strands will be linked to Mathematical Modelling to be used as a strategy for developing mathematics and critical thinking skills.
Paul White Sue Wilson	Primary 6	A different approach to teaching percentages in year 6	The session looks at a set of lessons, student work and classroom episodes from a research project funded by the ACT Hub of the National Centre for Science, Information and Communication Technology and Mathematics Education for Rural and Regional Australia (SiMERR). Five teachers used Teaching for Abstraction with "Percentages as a way of making comparisons" in Year 6. Lessons explored familiar percentage contexts, searched for similarities in mathematical structures and applied learning to other less familiar situations. The teachers' feedback suggested this approach was different from that to which students and they are accustomed, but found it generated extended discussion and promoted student engagement and learning.
Norman Wildberger	Secondary 7-12 & Post-secondary	Grid geometry and rational trigonometry	Planar geometry can be simplified by working consistently with a grid. This lets students see the natural connections between algebra, geometry and ideas from linear algebra. In fact it also connects with the approach of the ancient Greeks, for whom area was the fundamental measurement. And it allows us to easily derive the basic results of rational trigonometry, a new simplified approach to a traditionally difficult subject.
Sue Wilson	Post Secondary	Bibliotherapy, a powerful tool to alleviate mathematics anxiety in pre-service primary teachers: a reflective report	This reflective report synthesises the research background that has informed recent research on bibliotherapy as a tool in primary teacher education. Its use to address mathematics anxiety in school students will be discussed. Bibliotherapy provides a structure and language for educators to help pre-service teachers to reconstruct their own school experiences and reinterpret their views of themselves as learners of mathematics while studying school students' experiences. Bibliotherapy simultaneously addresses affective and cognitive domains and has the power to encourage pre-service teachers to change their image of themselves as students, and their assessment of their capacity to learn and teach mathematics.

Sue Wilson	Primary 3-6 & Secondary 7-10	CRIMS (Context Rich Integrated Mathematics and Science) and teacher professional learning.	What activities can combine the thinking, reasoning and communicating aspects of science and mathematics with the development of essential skills? How can we adapt our existing lessons to generate richer approaches? How can we support teacher professional learning integrating mathematics and science and addressing the AAMT and ASTA professional standards? The ASISTM CRIMS2 PL and SiMERR CRIMS RR projects focus on teacher professional learning, working with middle years teachers from metropolitan and rural schools. The workshop will present the CRIMS principles and activities incorporating science as a way to know and working mathematically.
Jennifer Woods	Secondary 7-12	Circuit maths	This session presents some interesting units for Stage 5 which involve a variety of "circuit tasks" over 100 minute lessons. The circuit tasks are differentiated to cater for students' abilities and learning preferences, and include assessment for learning. The circuits are best implemented for whole year groups. Session participants will experience some of the activities and receive resources.
Jennifer Woods	Secondary 7-12	Alternative assessment strategies	This session will present a variety of alternative assessment strategies for Stages 5 and 6 which have been effective and meaningful for both teachers and students. Participants will experience some of the tasks first hand and receive resources.
Jennifer Woods	Secondary 7-12	Girls' resilience in mathematics	This seminar will present a brief summary of the current research on resilience building for girls in Mathematics as well as the preliminary findings after trialling a program based around the key ideas. Schema building, teaching concepts VS teaching processes, and teaching for connectedness are linchpins of the program which was targeted at preparing year 10 girls for the senior 2 Unit Mathematics course.