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### Special Note:

This year we have included three “Extended Sessions”. These sessions run over two one hour sessions plus the break in between (length will vary depending on presenter/topic). If you are attending an extended session, for example Session A-B this will replace your choices for both Session A and Session B.

Listing of Sessions by Presenter  
102
Welcome to the 2012 MAV Annual Conference.

As I conduct tours for prospective new parents looking to enrol their child in school for the first time I often reflect with them on the changes that have occurred to the way in which we teach children. The idea that we focus on personalising a child’s learning journey for them right from the beginning of their schooling life is one that strikes a real chord with parents and students alike.

In an era where data and constant improvement in student outcomes drive the teaching profession, this year’s conference theme, “It’s My Maths: Personalised Mathematics Learning” is an excellent opportunity for us as teachers to continue to find better ways to achieve this goal for the students in our classrooms.

This, the 49th Annual Conference for the MAV, continues to offer the wide variety of options and presenters that has become synonymous with the conference. Exciting for this conference too, is the vast number of new presenters we have making their debut presentation. The conference committee would like to thank all the presenters for this year and acknowledge the hard work and commitment that they show in helping to make this an event on the education calendar not to be missed.

Our anniversary lecture this year will be presented by Douglas Hilton PhD FAA FTSE, Director, The Walter and Eliza Hall Institute of Medical Research, University of Melbourne, who will discuss the Importance of Mathematics in the Biomedical Sciences. This promises to be an interesting presentation as Doug shares his knowledge about this new and exciting field of Mathematics.

For our Closing Ceremony we have issued the challenge to Matt Skoss, of Maths on the Mat with Matt fame from previous conferences, to share his widely popular and highly interactive session with all participants of the conference. This is a presentation not to be missed as Matt shares his experiences at MAV conferences and provides us with some simple, yet highly effective ways to engage our students within the world of Mathematics.

Key to the success of our Annual Conference is the support we receive from our sponsors, Texas Instruments, Casio and Oxford University Press who are Major Sponsors and the MAV and Conference Committee would like to thank them for their continued commitment. We would also like to thank all of our minor sponsors for this year.

We should also acknowledge the hard work shown by members of our Conference Committee, Julie Allen and her team from the Full Pretzel and the team in the MAV office in the development and delivery of the conference. It is through their dedication that each day runs smoothly and efficiently and participants are able to attend such a wonderful conference.

I am confident that you will all leave the conference re-energised and armed with an extended knowledge base on how to best provide teaching and learning experiences that cater for each child in your classrooms as an individual.

Michelle Huggan
Conference Convenor
PROGRAM

THURSDAY 6th DECEMBER
8:00am - 5:00pm Registration Open
8:00am - 5:50pm Exhibition Open
9:00am - 9:10am Welcome - Michelle Huggan, Conference Convenor
9:10am - 9:25am Publications Awards - Dr Ahmad Samarji, Journals Committee
9:30am - 10:20am Anniversary Lecture - Prof Douglas Hilton PhD FAA FTSE
10:20am - 11:10am Morning Tea
11:10am - 12:10pm Session A
11:10am - 1:30pm Session A-B
12:10pm - 12:30pm Change Over
12:30pm - 1:30pm Session B
1:30pm - 2:30pm Lunch
2:30pm - 3:30pm Session C
2:30pm - 4:50pm Session C-D
3:30pm - 3:50pm Change Over
3:50pm - 4:50pm Session D
4:50pm - 5:50pm Happy Hour
7:30pm - 10:30pm Dinner

FRIDAY 7th DECEMBER
8:00am - 4:30pm Registration Open
8:00am - 2:10pm Exhibition Open
9:00am - 10:00am Session E
10:00am - 10:45am Morning Tea
10:45am - 11:45am Session F
10:45am - 1:10pm Session F-G
11:45am - 12:10pm Change Over
12:10pm - 1:10pm Session G
1:10pm - 2:10pm Lunch
2:10pm - 3:10pm Session H
3:10pm - 3:30pm Change Over
3:30pm - 4:30pm Closing Ceremony - Matt Skoss

Extended Sessions:
This year we have included three “Extended Sessions”. These sessions run over two one hour sessions plus the break in between (length will vary depending on presenter/topic). If you are attending an extended session, for example Session A-B this will replace your choices for both Session A and Session B.
GENERAL INFORMATION

Conference Venue: La Trobe University
Kingsbury Drive
Bundoora Victoria

KEYNOTE SPEAKERS:
◊ George Booker - Author and Educational Consultant, QLD
◊ Dr Leicha Bragg - Deakin University, VIC
◊ Dr Jeanne Carroll - Victoria University, VIC
◊ Dain Hedgpeth - Frosch Media, NSW
◊ Tierney Kennedy - Consultant, QLD
◊ Professor Dr Matthias Ludwig - Goethe-University, Germany
◊ Professor Helen MacGillivray - Queensland University Technology/International Statistical Institute (ISI), QLD
◊ Associate Professor David Shallcross - University of Melbourne, VIC
◊ Professor Dianne Siemon - RMIT University, VIC
◊ Dr Pumadevi Sivasubramaniam - Teacher Education Institute, Malaysia
◊ Dr Mary Kay Stein - University of Pittsburgh, USA
◊ Associate Professor Colleen Vale - Deakin University, VIC
◊ Nadia Walker - Create Collaborate Educate - Educational Consultant, VIC

CONFERENCE OFFICE CONTACT:
Julie Allen - Event Manager
PH: 61 (0) 3 9380 2399
MB: 61 (0) 411 243 029
mail: jallen@mav.vic.edu.au

The Mathematical Association of Victoria
61 Blyth Street
BRUNSWICK VIC 3056
AUSTRALIA
PH: 61 (0) 3 9380 2399
FX: 61 (0) 3 9389 0399
REGISTRATION INFORMATION

Registration Fees:
1. Session Registration
   - 1 Day
     - Member Metro: $212
     - Member Non-Metro: $206
     - Non-Member: $275
     - Student: $110
   - 2 Days
     - Member Metro: $424
     - Member Non-Metro: $412
     - Non-Member: $550
     - Student: $220

2. Conference Dinner (Thursday 6th December) $70.00
3. Happy Hour (Thursday 6th December) FREE to registered delegates
4. Lunch (1 per person, per day) FREE to registered delegates

All prices are inclusive of 10% GST.

**SPECIAL CONFERENCE OFFER!!**
Select to attend 2 days of the conference for $550 at the non-member rate and we will include an individual membership for 2013 (valued at $127).

How to Register:
1. Read this book, select the presentations you wish to go to in each session.
2. Get a school purchase order OR credit card number from your Bursar or Accounts person.
3. You will need your username and password to register online, if unsure ring the MAV office on 61 3 9380 2399.
5. If registering on the MAV site for the first time go to “Create an account” and follow the instructions to create your profile.
6. Once logged in, click on the box that has the MAV Annual Conference - choose your sessions, social program, food, accommodation, etc then click confirm.
7. Check the summary and amount you have been charged - If you think you are a member but have been charged as a non-member check with our office by calling 61 3 9380 2399.
8. Click on either Purchase Order or Pay Online, the click on “Submit” to complete your registration.
9. Print out a copy of your confirmation for your records.
10. You will receive an automatic email response confirming your registration.

   **If you do not receive this email within 24 hours your registration has not been completed.**

Note: After you have registered you may login at any time using your login details to change your sessions or to re-print your confirmation. You cannot change any item that effects the amount transacted and these changes will have to be made by the office.

Inclusions:
The Registration Fee includes (per person) - 1 Copy of the Conference Proceedings; morning tea for each day registered; 1 lunch voucher for each day registered; attendance at selected sessions; Happy Hour on Thursday 6th December; and access to industry exhibition.

Notes:
◊ Registrations will NOT be processed without full payment or a school purchase order number.
◊ Session numbers are limited and the website will indicate when sessions are full.
◊ Member rates apply to individual members, institutional/school members, Australian Mathematics Associations who are members of AAMT and New Zealand Mathematics educators who are members of the NZAMT.
◊ The MAV reserves the right to cancel presentations if minimum numbers are not reached.

APPLICATIONS CLOSE MONDAY 12TH NOVEMBER 2012 AT 5:00PM

Cancellation Policy:
Participants who cancel their booking on or prior to Monday 12th November 2011 will receive a refund less a $25 administration fee. All cancellations MUST be in writing and include any documentation already sent out. NO REFUNDS are available after the 12th November 2012. Registration may be transferred to another person.
A number of food outlets at La Trobe University will be serving lunch to conference delegates. You will receive a lunch voucher with confirmation of your registration. This will entitle you to a “MAV Conference Package Lunch” at the following campus outlets:

◊ Ping’s Café Moat (V)
◊ Eagle Café (V)
◊ Charlie’s Coffee & Kebabs (H,V)
◊ Veloci Café (V)
◊ Caffeine Café (V)
◊ Café Spice (H,V)
◊ Vital@t
◊ Fusion Pizza
◊ Mamak Rice & Noodle (V)
◊ Lifeskills Café (V)

(H) - Halal available
(V) - Vegetarian available

When filling in your registration form online you MUST select which outlet you want to get lunch from for each day you are attending. If nothing has been selected your default will be Ping’s Café Moat.

Union Building

Ping’s Café Moat

Thursday
Hot Lunch Box - Steamed Rice, Lemon Chicken, Stir Fry Mixed Vegetables PLUS Bottle of Drink
Cold Lunch Box - Roasted Chicken & Salad Roll, Vegetable Sushi, Fruit PLUS Bottle of Drink

Friday
Hot Lunch Box - Steamed Rice, Rainbow Steak, Stir Fry Mixed Vegetables PLUS Bottle of Drink
Cold Lunch Box - Teriyaki Chicken & Salad Roll, Vegetable Sushi, Fruit PLUS Bottle of Drink

Eagle Café

Beef Lasagne OR Vegetable Quiche OR Beef and Guinness Pie PLUS Garden Salad PLUS 375ml Coke OR Solo

Agora Square

Charlie’s Coffee & Kebabs

Sandwiches/Wraps/Rolls - Thai Grilled Chicken & Salad OR Falafel with Tabouli & Hummus (V) OR Chicken Schnitzel with Lettuce, Cheese & Mayo OR BBQ Chicken and Salad PLUS Bottle of Water OR Fruit Juice PLUS Piece of Fruit

Veloci Café

Grilled Chicken, Lettuce & Mayo Focaccia OR Falafel Humus and Tabouli Wrap (V) OR Selection of 4 Fresh Gourmet Salads from Salad Bar - Chicken & Avocado Pasta Salad / Caesar Salad / Potato and Egg (V)
Beet Root and Sweet Chilli (V) OR Selection of Fresh Vegetarian and Meat Pasta Dishes PLUS Piece of Fresh Fruit PLUS 600ml Water OR 375ml Soft Drink / Orange Juice PLUS Chocolate Treat

Caffeine Café

Fresh Roll OR Gourmet Sandwich OR 3xSushi PLUS Reg Drink - Coffee / Hot Choc / Water / Can / Small Juice PLUS Christmas Fruit Mince Pie

Cafe Spicé

Large Serve Combination of Any Two Curries Served with Rice from a Selection of 3 Meat and 3 Vegetarian Curries PLUS 1 Naan Bread PLUS Soft Drink Can OR Bottle of Water OR Mango Lassi

Vital@t

Chicken Tender Wrap OR Turkish Roll OR Baguette PLUS Can of Soft Drink PLUS Piece of Fruit
Fusion Pizza
2 Slices of Pizza OR Large Pasta OR Large Lasagna PLUS Small Chips PLUS Can of Soft Drink PLUS Piece of Fruit

Mamak Rice & Noodle
Chicken OR Beef OR Vegetarian WITH Noodles/Rice WITH Chili Sauce OR Satay Sauce OR Oyster Sauce PLUS Can of Drink

Lifeskills Café
One Wrap - Variety Available OR Homemade Vegetarian Quiche PLUS Drink

HAPPY HOUR
DATE: Thursday 6th December 4:50pm - 5:50pm
VENUE: Exhibition, Main Hall, Union Building
Happy Hour is free of charge and open to all registered delegates and exhibitors. Please indicate whether you will be attending this event when registering online.

CONFERENCE DINNER
DATE: Thursday 6th December
7:30pm - 10:30pm
VENUE: New Guernica
2/322 Little Collins Street
Are you always in the Kitchen at Parties? Then the conference dinner this year will be perfect for you. New Guernica is the new “It” venue in Melbourne. Each room has a different theme and we are taking you back to the 50’s classic kitchen and lounge room to party the night away. Rather than a formal sit down dinner, this is your opportunity to mix and mingle and at the end of the night kick up your heels in the kitchen disco.

The price $70 includes travel from La Trobe to the venue, entertainment, cocktail food, beer, wine, soft drinks and basic spirits.

A bus will pick up dinner attendees from La Trobe University at 6:00pm and then pick up at Rydges Hotel.

At the end of the evening the bus will then drop off those staying at Rydges and Glen College.
ACCOMMODATION

RYDGES HOTEL, PRESTON
Located a short 10 minute drive from La Trobe University, this is a 4 star hotel. A shuttle bus will operate between Rydges and La Trobe University on the Thursday and Friday of the conference.

Option 1
Student Rooms
These rooms consist of 1 single bed 190cm long X 94cm wide and offer a work station with high speed internet, Foxtel, tea & coffee making facilities, small bathroom with shower over toilet and self controlled air conditioning.

Student Room $ 87.00 Per Room/Per Night

Option 2
Sleep & Go Queen or Twin
Featuring floor to ceiling glass, these rooms consist of either 2 single beds or 1 queen bed and offer a work station with high speed internet, Foxtel, tea & coffee making facilities, wet bathroom style en-suite and self controlled air conditioning.

Sleep & Go Queen/Twin $ 142.00 Per Room/Per Night

Option 3
1 Bed Manhattan Room
Simply stunning 1 Bed Manhattan offers 1 queen Rydges dream bed, self contained kitchenette including stove top, microwave, fridge, lounge & dining. All rooms feature work station, high speed internet, Foxtel, self controlled reverse cycle air conditioning / heating, minibar, LCD TV & in room safe.

1 Bed Manhattan Room $ 197.00 Per Room/Per Night

Option 4
2 Bed Manhattan Room
As per the 1 Bed Manhattan but with 2 queen Rydges Dream beds.

2 Bed Manhattan Room $ 263.00 Per Room/Per Night

All rooms are subject to availability. We have placed a limited hold on rooms so book early to secure a room.

GLENN COLLEGE
Student Rooms (availability on application)
Glenn College is located on campus at La Trobe University. These are student rooms used during the year so are not spacious. Please note also that there are a number of other patrons staying at the college at the same time so there may be some noise during your stay. These rooms consist of 1 single bed. Bathrooms are shared with 1 bathroom for every 4 rooms. You will need to bring your own toiletries and soap. The below prices do not include breakfast and will need to be booked directly with the University Residential Services.

This accommodation will not be available via our online booking system. To book this type of accommodation go to http://www.mav.vic.edu.au/conference or contact the University directly:
La Trobe University Residential Services
Ph: +61 3 9479 2875
Fx: +61 3 9479 3690

Student Room
1 night only $ 90.00 Per Room
2 or more nights $ 45.00 Per Room/Per Night
The Importance of Mathematics in the Biomedical Sciences

Douglas Hilton PhD FAA FTSE
Director, Walter and Eliza Hall Institute of Medical Research
Professor of Medical Biology and Head of the Department of Medical Biology, Faculty of Medicine, Dentistry and Health Sciences, The University of Melbourne

With the development of new technologies such as next generation DNA sequencing, biologists are generating data at unprecedented rates. In order to acquire, store, interpret and visualise this data biologists need to collaborate, hand in glove, with mathematicians and computer scientists. This is the field of bioinformatics. This is the new frontier of biomedicine. Such is the skills shortage in this area, that competent mathematics graduates with a desire to work in biological research will be almost guaranteed of a job.

Doug was educated at Warrandyte primary school and East Doncaster high school in the eastern suburbs of Melbourne, prior to completing a Bachelor of Science degree at Monash University. In 1984, as a summer vacation student at the ANU in Canberra, he acquired a passion for research and for blood cells. In 1986, he moved to the Walter and Eliza Hall Institute of Medical Research and the University of Melbourne as a Bachelor of Science Honours student and stayed to complete his PhD. He spent two years as a postdoctoral fellow at the Whitehead Institute, Massachusetts Institute of Technology in Boston, before returning to WEHI as a laboratory head. In 2005 he established the Division of Molecular Medicine, which aims to use systems biology to understand the blood cell system. In 2009, Doug was appointed as the sixth director of the Walter and Eliza Hall Institute, succeeding Frank Macfarlane Burnet, Gus Nossal and Suzanne Cory. Doug is married - he and his wife, Adrienne, have two sons, Josh and Zeph and a Kelpie named Jessie. In his spare time, Doug coaches and referees junior basketball, works in the garden and on the taxonomy of Australian moths.
Maths on a Mat with Matt - Looking Back at How the MAV Conference has Influenced Me

Matt Skoss
Consultant, Northern Territory

8 years into my teaching career in Alice Springs, I attended my first MAV Conference in 1994. Since then, I’ve made it a nearly annual sojourn to Melbourne. From that first conference, I was determined to bring back one ‘big idea’ to share with teachers in my region. Flicking through the conference proceedings on the plane trip home, I settled on Doug Williams’ article ‘Maths on a Plastic Mat’ to share. Unfortunately I didn’t attend Doug’s session, but I’ve been working hard to honour the ideas from his article, and adding to them ever since.

There is a parallel to the recent Transit of Venus, where astronomers are trying to replicate the results from previous generations of scientists, and use emerging technologies to elicit new data not previously obtainable. The Maths Mat offers a wonderful professional opportunity to build on the pedagogical ideas of teachers (past and present), with a chance to be creative and add to library of lessons, scrutinising the ‘A-ha moments’ of a fragment of a lesson. With an intersection of mathematical ideas and the inevitable mobile devices lurking in students’ pockets, opportunities abound for students and teachers to capture mathematical ideas arising from kinaesthetic activities. Replicating ‘well-travelled’ activities on a Maths Mat such as the Algebra Walk, continually help students lay down the neural pathways to retain their understanding of functions, and create a John Mason-esque “brief, but vivid description” allowing them to ‘re-enter’ the experience at a later time.

This will be an interactive session where I will share my ‘brief, but vivid descriptions’ from MAV Conferences and the influence on my practice.

Matt Skoss is an experienced classroom teacher, having taught for over 25 years. He has enjoyed several curriculum roles with a Maths and ICT focus for NT Department of Education & Training. He also works as a consultant for schools in Australia, with a strong interest in supporting remote and country schools. Matt has a strong belief in making ICT accessible and highly visual to all students, using digital resources. He likes to make powerful, but incidental use of learning technologies and Web 2.0 tools to amplify student learning. Resources that might be useful for classroom teachers are uploaded to his Maths? No Fear! wiki at: http://maths-no-fear.wikispaces.com.
### SESSION SUMMARY

**SESSION A - 11:10am-12:10pm Thursday 6th December**

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<td>AK2</td>
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<td>Innovative Teachers and Technological Pedagogical and Content Knowledge</td>
<td>Dr Pumadevi Sivashubramaniam</td>
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<td>Working Mathematically With Infants</td>
<td>Douglas Williams</td>
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<td>Incorporating Higher Order Thinking in the Primary Mathematics Classroom</td>
<td>Dr Catherine Attard</td>
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<td>K to 7</td>
<td>Empowering Teachers in New Ways</td>
<td>Alexander Young</td>
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<td>A6</td>
<td>K to 10</td>
<td>Big Ideas! Have You Got Any?</td>
<td>Juanita Blades, Janette Neilsen, Trish Boon-Smith</td>
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<td>A7</td>
<td>F to 2</td>
<td>Personalising Maths Learning Using iPads in the Early Years</td>
<td>Helen Edmonds, Pam Wright, Annemarie Holmyard, Neschelle Castillo</td>
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<td>Transforming the Way Students Understand Mathematics Using Manipulative Materials</td>
<td>Rachel Kennedy</td>
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<td>F to 6</td>
<td>Fluency in Number</td>
<td>Ann Rasmussen, Judy Powell, Melissa Campbell</td>
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<td>A10</td>
<td>F to 6</td>
<td>Really Engaging Maths (REM)</td>
<td>Daniel Murphy, Amanda Portelli, Kate Wilkins</td>
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<td>A11</td>
<td>F to 6</td>
<td>Lesson Study at Kororoit Creek Primary School</td>
<td>Assoc Prof Colleen Vale, Dr Wanty Widjaja, Hannah Jordan, Anita-Louise Cory, Dane Harvey</td>
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<td>Literacy in Mathematics</td>
<td>Donna Yates</td>
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<td>“I Just Knew It!” Communicating and Reasoning Tips</td>
<td>Tierney Kennedy</td>
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<td>Claire O’Connor, Julie Thompson</td>
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<td>Publishing for Mathematics Teachers</td>
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<td>Mental Thinking Using ‘Make The Target Number Strategy’</td>
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<td>Maths Enrichment in Cambodia</td>
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<td>Supporting Struggling Students: Place Value and Fractions, Years 7-8</td>
<td>Anita Chin</td>
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<td>Constructing Animated Proofs Using a Dynamic Geometry Software</td>
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<td>Getting Rid of the Textbook: Theoretical Basis and Practical Experience</td>
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<td>MATHOMAT, School Project Day and Creative Drawing at Year 8</td>
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<td>Using SOLO Taxonomy in the Mathematics Classroom</td>
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<td>Using CAS as a Teaching Tool for Linear Functions to Linear Programming</td>
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<td>From Geoboard to CAS Calculator</td>
<td>Michael Chapman</td>
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<td>A45</td>
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<td>Mathematica™: Pandora’s Box or Classroom Empowerment I? Teaching with Mathematica™</td>
<td>Dr Brenton Groves</td>
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A46 10 to 11 Engaging Foundation Mathematics Students - Some Suggestions - Leah Whiffin, Sue Scott
A47 10 to 12 An Introduction to Markov Chains - Prof Terry Mills
A48 11 to 12 VCE and the Virtual Learning Network - Stuart Payne, Tony Carroll
A49 11 to 12 Kissing in the Mathematics Classroom Using the TI-Nspire CAS! - Russell Brown, Rodney Anderson
A50 11 to 12 Programming Ti-Nspire for Fully Automated Solutions of Mathematical Methods CAS Exam 2 Questions - Mehmet Altundal
A51 11 to 12 What's New in the Australian Curriculum for Victorian Mathematical Methods and Specialist Mathematics Teachers - Allason McNamara, Dr Philip Swedosh, Dean Lamson
A52 12 to 12 studyON for VCE Mathematics - Want to Improve Your Students' Exam Results? - Shirly Griffith

SESSION A-B - 11:10am-1:30pm Thursday 6th December
A-B1 5 to 10 Take Real Data Into Your Classroom Using CensusAtSchool (Australian Bureau of Statistics) - Mary-Anne Aram
A-B2 6 to 12 Motivating Students & Transforming Teaching with the Classroom Organiser Software - Bill Murray, Victoria Pichler
A-B3 7 to 12 The Big Maths Ideas in 14 Poems - Helen Prochazka, Maurice Murphy, Adrian Jacobson
A-B4 8 to 10 Using 'Algebra Tiles' to Teach Integers, Expansion and Factorisation - Michael O'Reilly, Norrian Rundle
A-B5 9 to 11 Using TI-Nspire CAS Navigator to Transform a Good Lesson Into a Great Lesson: Revisiting the Surd Spiral - Roger Wander
A-B6 9 to 12 Get More TI Inspired! - Frank Moya

SESSION B - 12:30pm-1:30pm Thursday 6th December
B1 F to 6 Differentiation: The Heart of Personalising Learning - Nadia Walker
B2 6 to 8 Orchestrating Productive Mathematical Discussions: A Model for Moving Beyond “Showing and Telling” - Dr Mary Kay Stein
B3 K to 6 Hands-on Activities to Engage Every Child - Dr Catherine Attard
B4 F to 3 Developing Flexible Thinkers in the F-3 Mathematics Classroom - Richard Korbosky
B5 F to 6 Fluency in Number - Ann Rasmussen, Judy Powell, Melissa Campbell
B6 F to 6 Geometric Thinking Through Geocaching - Dr Leicha Bragg
B7 F to 7 Literacy in Mathematics - Donna Yates
B8 F to 8 Nurturing the Maths Learner from Concrete to Abstract - Laughing all the Way - Rod Cameron
B9 F to 10A Transform Your Classroom with Online Curriculum, Assessment and Reporting - Cambridge HOTmaths - Sharon London, Victoria Cook
B10 F to 12 A Lesson Study Approach to Professional Learning - Rob Park, Stan Koullas
B11 F to 12 Training Teachers in Tanzania - Jenny Clark
B12 1 to 3 Fractions - The Pieces Get Skinnier and Skinnier! - Anne Milburn, Alison Howard
B13 1 to 7 Approaching Mathematics Through Rich Tasks - Fiona Fox, Deb Reeves
B14 1 to 7 Pattern & Structure - Based on Joanne Mulligan’s Work With Early Years Children - Marilyn Holmes
B15 1 to 8 From NFI to WTF: Creating an Engaging Learning Community - Prof Martin Westwell, Kristin Smith, Deb Lasscock
B16 1 to 10 ACER's Online Assessment and Reporting Platform - Mette Høeyerberg, Julia Inglis
B17 1 to 12 Planning for Retirement - Edward Patterson
B18 3 to 6 Knowing What Works With Teaching Fractions - Jude Callaghan, Elizabeth Johnson
B19 3 to 7 Using the Modified Lesson Study to Develop Students’ Relational Thinking - Lei Bao, Dr Max Stephens
B20 3 to 10 Maths With Attitude: Take a 2nd Look - Douglas Williams
B21 4 to 6 Visual Representations of Learning Intentions Drawn from the Australian Curriculum Elaborations in Mathematics - Donna Ludvigsen, Anника Dalgleish
B22 4 to 7 The BIG F - All About Fractions - Consolidation of the Number System and an Introduction Into the World Of Algebra - Ian Bull
B23 5 to 8 Sundials and Other Solar Instruments - Tim Byrne
B24 5 to 8 Problem Solving - Daniel Avano, Bronwyn Quint
B25 5 to 8 Knowledge Plus Action Equals a Positive Outcome - Marilyn Snider, Megan Bourke
B26 5 to 9 Using Self-Assessment Tools to Inform Your Teaching in Middle Years Classrooms - Meredith Clegg, Justine Johnston
B27 5 to 9 The Mathematics of Planet Earth - Janine McIntosh, Lachlan McIntosh
B28 5 to 10 Connecting Mathematical Concepts Through Collaborative Problem Solving - Caroline Mazurkiewicz, Kathryn Palmer
SESSION C - 2:30pm-3:30pm Thursday 6th December

CK1  F to 9  My Maths? An Oxymoron or Wake-Up Call in an Era of National Curriculum and NAPLAN - Prof Dianne Siemon
C2   K to 1  Starters and Independent Activities for the First Years at School - Viv Thompson
C3   K to 6  Picture Books and Mathematics - Dorothy Butterfield
C4   F to 4  What I Have to Teach Algebra! - Sharyn Livy, Tracey Muir
C5   F to 4  Early Years Concept Map - Rob Profitt-White
C6   F to 6  How We Introduced Personal Learning at Tallis Street - Pat Conheady, Michelle Gawronski
C7   F to 6  Student Reflection - Sheila McCarthy, Sandi Warrick
C8   F to 6  Models and Representations to Support Problem Solving - Prof Mike Askew, Lisa Canty, Lucy Gorman
C9   F to 6  Primary Maths Specialists at Upwey South Primary School - Julie Hall, Lee Reich
C10  F to 8  Let's Be Reasonable - Assoc Prof Colleen Vale, Dr Leicha Bragg, Dr Sandra Herbert, Dr Esther Loong, Dr Judy Mousley, Dr Gaye Williams
C11  F to 10A Transform Your Classroom with Online Curriculum, Assessment and Reporting - Cambridge HOTmaths - Sharon London, Victoria Cook
C12  F to 12 MAV Maths Talent Quest - Working Mathematically, Investigation Projects Workshop - June Penney, Kelly Gallivan
C13  F to 12 From NFI to WTF: Not Everyone’s Good at Mathematics! - Prof Martin Westwell, Kristin Smith, Deb Lasscock
C14  F to 12 Mathletics 'Integrating the Resources' - Lauren Anderson, Andrew Nicholls
C15  F to 12 GradeXpert Student Assessment Tracking Software - Anthony Sacker
C16  1 to 3 Fractions - The Pieces Get Skinnier and Skinnier! - Anne Milburn, Alison Howard
C17  1 to 8 Open and Closed Questions for Differentiated Learning - Greg Butler, Fiona Lindsay, Leanne Cummings
C18  1 to 8 Making Maths Marvellous with Manchester and Manipulatives - Gabrielle West
C19  2 to 6 From Number Sense to Fluency Using Playing Cards: No Joke(r) - Dr Paul Swan, Derek Hurrell
C20  2 to 8 Developing Logical Thinking - Rose Golds, Jo Knox
C21  2 to 10 Beyond the Tip of the Iceberg - Douglas Williams
C22  3 to 7 Algebraic Thinking - Richard Korbosky
C23  3 to 8 Focusing on the Language of Mathematics to Enhance Understanding, Years 3-8 - Anita Chin
C24  3 to 12 iPads and Apps in the Mathematics Classroom - Brett Stephenson
C25 4 to 7 Mathematics Investigations in Primary Mathematics - Dr Phong Lee Koay, Dr Lu Pien Cheng
C26 4 to 8 Time for YuMi Deadly Maths - Jan Cavanagh
C27 4 to 8 Bridging the Gap - Tanya Smith, Sophie Matta
C28 4 to 10 A Problem to Tease You - Prof Derek Holton
C29 5 to 9 Delivering Differentiation - Including Every Child - Yvonne Reilly, Jodie Parsons
C30 5 to 9 Teaching Families to Learn Maths at Home - Nathaniel Bradshaw, Justin Mattheys
C31 7 to 8 CAS in Years 7 and 8: What! Why and How - Sue Garner
C32 7 to 8 Quiz-it Maths! A Trivia Show Mixing Pop Culture With Maths - Pete Curry, David Warneke
C33 7 to 9 Achieving Better Results by Tailoring Mathematics to Individual Students' Needs With Assess - Sam Hopley
C34 7 to 10 Mathematica Links to AusVELS 7-10A - Brian Hodgson, Craig Bauling
C35 7 to 10 Constructing Animated Proofs Using a Dynamic Geometry Software - Dr Ng Wee Leng
C36 7 to 10 Using Mathematica in the Classroom - By Teachers for Teachers - Karen Reid, Carmen Popescu-Rose
C37 7 to 10 ‘Realistic Mathematics Education’ for Secondary Maths - Bruce Schmidt, Peter Durance
C38 7 to 10 Interactive Diagrams for Understanding Maths on a Computer - Secondary - Dr Ian Lowe
C39 7 to 10 Five Minute Activities - Kim Streek, Ingrid Jahneke
C40 7 to 10 Inquiry-Based Learning in Mathematics - Jennifer Nolan
C41 7 to 11 Resourcing Financial Literacy in the Australian Curriculum - Anne Nunan, Katrina Birch
C42 7 to 12 The Paperless Mathroom - Finally - Ro Bairstow
C43 7 to 12 The Quantified Self - Collecting and Visualising Data About You… - Colin Chapman
C44 7 to 12 Physical, Hands-On Activities for General and Further Mathematics - Kara Fox, Duane Anderson
C45 7 to 12 Teaching with the iPad - Freda Goddard, Ian Taylor
C46 7 to 12 So This Will Be/Has Been Your First Year of Teaching Mathematics? - Rob Vermay
C47 8 to 11 Discussion of Broader Issues in Teaching About the Mathematics of Gambling: Past, Present and Future - Donald Smith
C48 9 to 10 Using GeoGebra to Stimulate - Dianne Frost, Adrian Berenger
C49 10 to 12 Mathematica Notebooks as Pedagogical and Assessment Tool for Mathematical Methods (CAS) - Trevor Raine, Jennifer Palisse, Dr David Leigh-Lancaster
C50 10 to 12 How Helpful Was the CAS Calculator in this Year’s 2nd Methods Exam? - Kevin McMenamin
C51 10 to 12 Hands-On ClassPad Tips and Tricks for Upper School Teachers - Charlie Watson
C52 10 to 12 It’s Christmas! Let’s Celebrate and Pop a Cork… or Two! - John Bament
C53 12 to 12 Is there Harmony in Polynomials? - Marc Adam

SESSION C-D - 2:30pm-4:50pm Thursday 6th December
C-D1 F to 6 Teaching and Learning Maths Through Games - Peggy Ashton, Jennifer Vincent
C-D2 2 to 10 Teach Maths with Games Using Mangahigh.com - Mohit Midha
C-D3 4-10&VCAL Having Fun with Numeracy and Maths - Dave Tout
C-D4 7 to 12 Enrich Student Learning with TI-Nspire PublishView - Neale Woods
C-D5 7 to 12 What Could/Should a School CAS Look Like? - Dr Stephen Arnold
C-D6 11 to 12 Further Maths SACs - Design and Assessment - Andrew Stewart, Fiona Latrobe

SESSION D - 3:50pm-4:50pm Thursday 6th December
D1 K to 12 Mathletics “Assessment and Reporting” - Andrew Nicholls, Lauren Anderson
D2 K to 12 Open and Closed Questions for Differentiated Learning - Greg Butler, Fiona Lindsay, Leanne Cummings
D3 K to 7 Differentiation - Practical Strategies That Really Work - Tierney Kennedy
D4 K to 6 Starters and Independent Activities for the First Years at School - Viv Thompson
D5 K to 6 Picture Books and Mathematics - Dorothy Butterfield
D6 K to 12 Engaging Students Through Differentiated, Web-based Learning - Alan Power
D7 K to 6 What I Have to Teach Algebra! - Sharyn Livy, Tracey Muir
D8 K to 6 How We Introduced Personal Learning at Tallis Street - Pat Conheady, Michelle Gawronski
D9 K to 8 Fluency Activities to Consolidate Number Learning - Hayley Hoy, Rachael Lenehan
D10 K to 12 Place Value and Estimation - Rob Profitt-White
D11 K to 12 How Can We Use Google Earth in Mathematics Class - Dennis Fitzgerald
D12 K to 12 From NFI to WTF A Strategic Shift - Prof Martin Westwell, Kristin Smith, Deb Lasscock
D13 K to 12 MAV Maths Talent Quest - Working Mathematically, Investigation Projects Workshop - June Penney, Kelly Gallivan
D14 1 to 8 Higher Order Thinking Tasks for Low Achievers in Mathematics - Pearlyn Gan, Mei Yun Ng
D15 2 to 4
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<td>Grouping for Problem Solving: ‘Same Pace of Thinking’</td>
<td>Dr Gaye Williams, Judy Harrington, Sharon Goldfinch</td>
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<td>Focusing on the Language of Mathematics to Enhance Understanding, Years 3-8</td>
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<td>4 Arm Shapes &amp; Other Visual Algebra Experiences</td>
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<td>To LAF or Not to LAF That is the Question?</td>
<td>Christine Lenghaus, Jason McIntosh</td>
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<td>Teaching Families to Learn Maths at Home</td>
<td>Nathaniel Bradshaw, Justin Matthys</td>
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<td>Make Australian Curriculum Algebra Interesting and Understandable</td>
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<td>Spook Numbers? Squimes? Invent Your Own Finite Set</td>
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<td>Online Maths Resources</td>
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<td>Analysing Students’ Result Through Box-Plot Using Excel for Middle to Later Years Mathematics</td>
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<td>Using GeoGebra to Enhance Teaching of Primary School Mathematics</td>
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<td>Using Qedoc on Netbooks to Provide Multimedia Differentiation with LMS Student Tracking</td>
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<td>Middle School Mathematics: An Integrated Approach Using Manipulatives, MATHMAT and Geometry Software</td>
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<td>Oranges or Lemons - CAS in the 7-10 Curriculum</td>
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<td>Resourcing Financial Literacy in the Australian Curriculum</td>
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<td>MATHSPACE- Never Mark Homework Again. Seriously</td>
<td>Mohamad Jeebar</td>
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<td>Creating Quizzes and Tests Using Mathematica</td>
<td>Craig Bauling</td>
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<td>Lucky Colours of Sunshine: Teaching the Mathematics of Gambling Loss</td>
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<td>Mobile Phone Plans: Which Offer Do You Choose?</td>
<td>Kevin McMenamin</td>
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<td>Unwrapping the Circle</td>
<td>Assoc Prof Susie Groves</td>
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<td>Graphics Hand-Held Computers: Exploring New Possibilities</td>
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<td>Mathematica Notebooks as Pedagogical and Assessment Tool for Mathematical Methods</td>
<td>Trevor Raine, Jennifer Palisse, Dr David Leigh-Lancaster</td>
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<td>Colourful Conics on the TI-Nspire CAS</td>
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<td>Hands-On in the Upper School with ClassPad eActivities</td>
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<td>The Shoemaker’s Knife</td>
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<td>Is there Harmony in Polynomials?</td>
<td>Marc Adam</td>
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**SESSION E - 9:00am-10:00am Friday 7th December**

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<td>Give Me One Good Reason</td>
<td>Dr Leicha Bragg</td>
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<td>Dain Hedgepeth</td>
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<td>Rob Proffitt-White</td>
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<td>Children’s Literature in the Primary Mathematics Classroom</td>
<td>Dr Julie Clark</td>
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<td>Differentiating Instruction: Place Value Concepts, P-6</td>
<td>Anita Chin</td>
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<td>F to 6</td>
<td>There’s More Than One Way to Flip a Shape</td>
<td>Dan Jazby</td>
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<td>Lesson Study at Parkwood Green Primary School</td>
<td>Dr Brian Doig, Brooke McKerracher, Louise Spalliera, Tim Jenkins</td>
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<td>Probability and Statistics in The Australian Curriculum</td>
<td>Laurel Smith</td>
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<td>Nelson Maths - 100% Coverage of the APPROVED Australian Curriculum</td>
<td>Pauline Rogers</td>
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<td>Grading and Assessment</td>
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<td>How Can We Use Google Earth in Mathematics Class</td>
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<td>Mathematics Education - Military or Democratic? You Can’t Have Both</td>
<td>Dr Jude Ocean</td>
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<td>GradeXpert Student Assessment Tracking Software</td>
<td>Anthony Sacker</td>
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<td>Mental Thinking Using ‘Make The Target Number Strategy’</td>
<td>Richard Korbosky</td>
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<td>Maths Enrichment in Cambodia</td>
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<td>Menu Maths and Other Models for Making Mathematicians</td>
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<td>Exploring Games In Mathematics</td>
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<td>High Mathematical Performance on Class Tests is Not a Predictor of Problem-Solving Ability, Why?</td>
<td>Dr Gaye Williams</td>
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<td>15 Top Tips to Re-Energise Your Teaching of Mathematics</td>
<td>Greg Warmbrunn</td>
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<td>Enhancing Spatial Visualisation in the Primary Classroom with Google SketchUp</td>
<td>Dr Esther Loong, Dr Sandra Herbert</td>
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<td>Teaching Through Tessellations</td>
<td>Dr Heather McMaster, May McMaster</td>
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<td>Using the Australasian Problem Solving Mathematical Olympiads to Enhance the Proficiency Strands</td>
<td>Dr Anne Prescott, Jon Phegan</td>
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<td>RANTS (and Raves!): Rich Algebra and Number Tasks</td>
<td>Lorraine Day</td>
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<td>Spook Numbers? Squimes? Invent Your Own Finite Set</td>
<td>Bruce Henry</td>
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<td>Engaging Students in Learning Mathematics by Asking More Challenging Questions</td>
<td>Prof Peter Sullivan, Alan Stubbs, Alli Lehmann, Owen Shepherd, Brendan Hislop</td>
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<td>What is the Best Way to Teach Mathematics?</td>
<td>Leigh Thompson, Luke Blythman</td>
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<td>Slater Bugs, Carrots and My Two Daughters</td>
<td>Anthony Harradine</td>
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<td>E29</td>
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<td>Analysing Students’ Result Through Box-Plot Using Excel for Middle to Later Years</td>
<td>Iqbal Hossain, Rudy Birsa</td>
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<td>E30</td>
<td>6 to 11</td>
<td>Ratio: New Ideas for an Old Topic</td>
<td>Robert Money</td>
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<td>E31</td>
<td>7 to 9</td>
<td>Achieving Better Results by Tailoring Mathematics to Individual Students’ Needs With Assess</td>
<td>Sam Hopley</td>
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<td>E32</td>
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<td>Getting Rid of the Textbook: Theoretical Basis and Practical Experience</td>
<td>Lachlan Yeates, Hayley Paproth</td>
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<td>E33</td>
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<td>Solving Linear Equations</td>
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<td>Middle School Mathematics: An Integrated Approach Using Manipulatives, MATHOMAT and Geometry Software</td>
<td>John Lawton, Michael O’Connor</td>
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<td>E35</td>
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<td>MathsWorld for the Australian Curriculum: Print and Digital Solutions for the Classroom</td>
<td>Peter Saffin</td>
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<td>The Future is Here, It’s Just Not Widely Publicised</td>
<td>Peter Fox</td>
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<td>Teaching with the iPad</td>
<td>Freda Goddard, Ian Taylor</td>
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<td>Effective Mathematics Learning and Technology: Both Sides of the Möbius Strip</td>
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<td>Maths Meets Art - Projects Kids Will Want to Put on the Fridge</td>
<td>Jennifer Palisse</td>
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<td>E40</td>
<td>7 to 12</td>
<td>MATHSPACE- Never Mark Homework Again. Seriously</td>
<td>Mohamad Jebara</td>
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<td>E41</td>
<td>8 to 12</td>
<td>Reasoning - A Dog’s Tale</td>
<td>Prof Derek Holton, Prof Kaye Stacey</td>
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<td>E42</td>
<td>10-11</td>
<td>Virtual Reality Excursions - Exploring the Altona Water Treatment Facility</td>
<td>Assoc Prof David Shallcross</td>
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<td>E43</td>
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<td>An Online Numeracy Assessment Tool for Youth and Adults</td>
<td>Dave Tout, Jim Spithill</td>
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<td>E44</td>
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<td>Teaching with the iPad</td>
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<td>A Smorgasbord of Univariate Data Analysis on the TI-Nspire</td>
<td>Russell Brown, Rodney Anderson</td>
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<td>E46</td>
<td>10-12</td>
<td>Using Mathematica to Tackle Mathematical Methods (CAS) Examination 2 Multiple Choice Questions</td>
<td>Dr David Leigh-Lancaster, Brian Hodgson</td>
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<td>ClassPad Use, By an Experienced and a New Teacher, in the VCE</td>
<td>Sue Garner, Fiona Greenway</td>
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<td>E48</td>
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<td>TI-Nspire and Statistics</td>
<td>Prof Ming-Gong Lee</td>
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<td>Further Maths Examinations This Year: Where Was the CAS Calculator Useful?</td>
<td>Kevin McMenamin</td>
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**SESSION F - 10:45am – 11:45am Friday 7th December**

FK1 3 to 9  Developing Problem Solving: Moving From Conceptual Understanding and Fluency to Solve Mathematical Problems | George Booker |
FK2 5 to 10  Virtual Reality Excursions - Exploring the Altona Water Treatment Facility | Assoc Prof David Shallcross |
FK3 3 to 9  Empowering Teachers in New Ways | Alexander Young |
FK4 3 to 9  Personalising Maths Learning Using iPads in the Early Years | Helen Edmonds, Pam Wright, Annemarie Holmyard, Neschelle Castillo |
FK5 3 to 9  Transforming the Way Students Understand Mathematics Using Manipulative Materials | Rachel Kennedy |
FK6 3 to 9  Fluency Activities for Prep to Grade 6 | Lisa Stanford, Renee Italia, Melissa Brown |
FK7 3 to 9  Children’s Literature in the Primary Mathematics Classroom | Dr Julie Clark |
FK8 3 to 9  Professional Development of Teachers Using Lesson Study: A Shared Journey | Dr Wanty Widjaja, Assoc Prof Colleen Vale |
F9  F to 6  Teach Australian Curriculum Maths for Understanding - Primary - Dr Ian Lowe
F10 F to 6  Probability and Statistics in The Australian Curriculum - Laurel Smith
F11 F to 6  Differentiating Instruction: Place Value Concepts, P-6 - Anita Chin
F12 F to 8  Place Value and Estimation - Rob Proffitt-White
F13 F to 10A What's NEW @ Cambridge HOTmaths - Sharon London, Victoria Cook
F14 F to 12  A Lesson Study Approach to Professional Learning - Rob Park, Patricia McNamee
F15 F to 12  Mathematics Education - Military or Democratic? You Can't Have Both - Dr Jude Ocean
F16 F to 12  Superannuation - Ignorance May Be Bliss, But Also Expensive - Rob Vermay
F17 F to 12  Mathletics “Assessment and Reporting” - Andrew Nicholls, Lauren Anderson
F18 2 to 6  Using Maths Tasks and Mixed Groups to Improve Mathematical Proficiency in the Primary Years - Sue O’Connell, Sue Wilson
F19 3 to 7  Engineering ‘aha’ Moments in Number - Douglas Williams
F20 4 to 7  Mathematics Investigations in Primary Mathematics - Dr Phong Lee Koay, Dr Lu Pien Cheng
F21 4 to 10  The MoneySmart Project. Financial Numeracy: The Australian Curriculum Approach - Shane O’Connor
F22 4 to 12  The TPACK Model Within a Mathematics Education Context - Dr Ahmad Samarji
F23 5 to 8  Using the Australasian Problem Solving Mathematical Olympiads to Enhance the Proficiency Strands - Dr Anne Prescott, Jon Phegan
F24 5 to 8  Measurement and Technology - Using Data Loggers - Bronwyn Quint, Daniel Avano
F25 5 to 9  Bringing Maths Problems to Life on the Computer Screen - Steven Francis, Ziad Baroudi, Nicola Maugeri, Grace Ang, Emma Spencer
F26 5 to 9  Strategies for Problem Solving - Assoc Prof Susie Groves
F27 5 to 11  Encouraging Disengaged Learners to Re-engage with Maths: Investigations with the EMPower Series - John Lawton, Richard Korbsky
F28 5 to 12  What is the Best Way to Teach Mathematics? - Leigh Thompson, Luke Blythman
F29 6 to 9  Operations with Integers - Stephen Swift
F30 6 to 11  Ratio: New Ideas for an Old Topic - Robert Money
F31 7 to 10  Action Research and Its Impact on Student Outcomes - Michelle Moses
F32 7 to 10  GeoGebra Resources for the Australian Curriculum - Tobias Cooper
F33 7 to 10  Pearson Assess - Evan Curnow, Dirk Strasser
F34 7 to 11  Creating Interactive Learning Documents - Peter Fox
F35 7 to 12  Using SOLO Taxonomy in the Mathematics Classroom - Mitchell Howard
F36 7 to 12  eduSTAR - Leanne Compton, Russell Blackie
F37 7 to 12  You Sunk My Space Ship! - Hayden McQueenie, Chris Ly
F38 7 to 12  Creating an Online Moodle Course for Your Mathematics Class - Mehmet Altundal
F39 9 to 12  Mathematica™: Pandora’s Box or Classroom Empowerment II? Curriculum Development with Mathematica™ - Dr Brenton Groves
F40 10 to 12  Intro to Mathematica - Craig Blake
F41 10 to 12  Colourful Conics on the TI-Nspire CAS - Raymond Rozen, Shirly Griffith
F42 10 to 12  Using Mathematica to Tackle Mathematical Methods (CAS) Examination 2 Multiple Choice Questions - Dr David Leigh-Lancaster, Brian Hodgson
F43 10 to 12  ClassPad Use, By an Experienced and a New Teacher, in the VCE - Sue Garner, Fiona Greenway
F44 10 to 12  An Ocean of Opportunity: Exposing Students to Real Applications of Mathematics - Dr Vikram Garaniya
F45 11 to 12  Kissing in the Mathematics Classroom Using the TI-Nspire CAS! - Russell Brown, Rodney Anderson
F46 11 to 12  An Amazing Theorem - John Kermond
F47 11 to 12  Further Mathematics and the National Curriculum - Prof Peter Jones

SESSION F-G - 10:45am-1:10pm Friday 7th December
F-G1 2 to 10  Teach Maths with Games Using Mangahigh.com - Mohit Midha
F-G2 5 to 10  Take Real Data Into Your Classroom Using CensusAtSchool (Australian Bureau of Statistics) - Mary-Anne Aram
F-G3 6 to 12  Motivating Students & Transforming Teaching with the Classroom Organiser Software - Bill Murray, Victoria Pichler
F-G4 7 to 12  The Big Maths Ideas in 14 Poems - Helen Prochazka, Maurice Murphy, Adrian Jacobson
F-G5 7 to 12  Lua for Everyone: Getting Started with TI-Nspire Scripting - Dr Stephen Arnold
F-G6 8 to 12  Just Mathematics - Anthony Harradine
F-G7 9 to 11  Using TI-Nspire CAS Navigator to Transform a Good Lesson Into a Great Lesson: Revisiting the Surd Spiral - Roger Wander
F-G8 11 to 12  Further Maths SACs - Design and Assessment - Andrew Stewart, Fiona Latrobe
SESSION G - 12:10pm-1:10pm Friday 7th December

GK1 1 to 12 Teaching Statistics to Connect - Prof Helen MacGillivray
GK2 7 to 12 MathCityMap - The Outdoor Math Project - Prof Dr Matthias Ludwig
G3 K to 3 Engaging Young Children in the ‘BIG IDEAS’ in Mathematics - Eva deVries, Prof Elizabeth Warren
G4 K to 12 Engaging Students Through Differentiated, Web-based Learning - Alan Power
G5 F to 3 Developing Flexible Thinkers in the F-3 Mathematics Classroom - Richard Korbosky
G6 F to 6 Fluency Activities to Consolidate Number Learning - Hayley Hoy, Rachael Lenehan
G7 F to 6 Primary Maths Specialists at Upwey South Primary School - Julie Hall, Gary Monopoli
G8 F to 6 Lesson Study at Creekside P-9 College - Assoc Prof Susie Groves, David Garner, Chris Karageorge, Caroline Stone
G9 F to 6 Nelson Maths - 100% Coverage of the APPROVED Australian Curriculum - Pauline Rogers
G10 F to 6 Speaking the Maths Language! - Greg Thomas
G11 F to 8 Nurturing the Maths Learner from Concrete to Abstract - Laughing all the Way - Rod Cameron
G12 F to 10A What's NEW @ Cambridge HOTmaths - Sharon London, Victoria Cook
G13 F to 12 Not MySchool! Reporting Large-Scale Assessments to Benefit Students - Dr Brian Doig
G14 F to 12 Mathletics ‘Integrating the Resources’ - Lauren Anderson, Andrew Nicholls
G15 1 to 4 Consolidating Basic Number Facts Through the Use of Card Games - Linda Baron
G16 2 to 5 Struggles with Regrouping - Tierney Kennedy
G17 2 to 6 Using Maths Tasks and Mixed Groups to Improve Mathematical Proficiency in the Primary Years - Sue O'Connell, Sue Wilson
G18 2 to 8 Fractions in a Fraction of the Time - Douglas Williams
G19 3 to 10 Using Excel to Create Statistical Displays - Jean Arnott
G20 4 to 8 High Mathematical Performance on Class Tests is Not a Predictor of Problem-Solving Ability. Why? - Dr Gaye Williams
G21 4 to 8 Bridging the Gap - Tanya Smith, Sophie Matta
G22 4 to 9 Using Whole Numbers and Number Lines to Develop Fraction Concepts - Catherine Pearn, Dr Max Stephens
G23 4 to 10 The MoneySmart Project. Financial Numeracy: The Australian Curriculum Approach - Shane O'Connor
G24 5 to 8 Measurement and Technology - Using Data Loggers - Bronwyn Quint, Daniel Avano
G25 5 to 9 Bringing Maths Problems to Life on the Computer Screen - Steven Francis, Ziad Baroudi, Nicola Maugeri, Grace Ang, Emma Spencer
G26 6 to 12 The Joy of Informatics - Jan Honnens
G27 7 to 8 CAS in Years 7 and 8: What! Why and How - Sue Garner
G28 7 to 8 Developing Students’ Relational Understandings of Mathematics - Dr Heather McMaster, May McMaster
G29 7 to 10 The Evolution of the Turtle from LOGO to Lego Mindstorms Robots - Nathaniel Bradshaw
G30 7 to 10 Using Mathematica in the Classroom - By Teachers for Teachers - Karen Reid, Carmen Popescu-Rose
G31 7 to 10A assessON - Assign, Monitor and Track Student Progress with ease - Shirley Sharpley, Emmanuel Azali
G32 7 to 10 Oranges or Lemons - CAS in the 7-10 Curriculum - Gael McLeod, Antje Leigh-Lancaster
G33 7 to 11 From Paper to Screen: Computer-Based Assessment of Mathematics - Lessons from PISA - Dave Tout, Jim Spithill
G34 7 to 12 eduSTAR - Leanne Compton, Russell Blackie
G35 7 to 12 What's an English Teacher Doing in a Mathematics Classroom? - Dr Ray Williams
G36 7 to 12 FX Draw Q&A - Paul Hooper
G37 7 to 12 Deepen Your Students Understanding of Data: Using TINKERPLOTS Dynamic Data Exploration Software - John Lawton, Dr Ian Lowe
G38 7 to 12 An Overview of Mathematica for the 7-12 Classroom - Craig Bauling
G39 8 to 12 From Geoboard to CAS Calculator - Michael Chapman
G40 8 to 12 Nspired Parabolas - Rama Ramakrishnan
G41 8 to 12 Empowering Teachers in New Ways - Alexander Young
G42 10 to 12 How Helpful Was the CAS Calculator in this Year’s 2nd Methods Exam? - Kevin McMenamin
G43 10 to 12 Hands-On in the Upper School with ClassPad eActivities - Charlie Watson
G44 10 to 12 The Shoemaker’s Knife - Hussein Tahir
G45 11 to 12 Cubics and Tangents - Shane Dempsey, Peta Taylor
G46 11 to 12 Graphs and Functions Transformations - Where Students Get Confused - Yuriy Verkhatsky
G47 11 to 12 SACs for Years 11 and 12 - Steve Morris
SESSION H - 2:10pm-3:10pm Friday 7th December

HK1 F to 9 Warm Up and Share Time - How To Make These Productive Learning Events
- Assoc Prof Colleen Vale

H2 F to 6 There's More Than One Way to Flip a Shape - Dan Jazby

H3 F to 6 Fluency Activities for Prep to Grade 6 - Lisa Stanford, Renee Italia, Melissa Brown

H4 F to 6 Differentiation Can Make a Difference! - Greg Thomas

H5 F to 7 Helping Kids to Actually Get Place Value - Tierney Kennedy

H6 F to 9 Structuring Lessons to Maximise Student Engagement in Learning - Prof Peter Sullivan, Sarah Stewart

H7 F to 10 Multiplication, Meaning & Times Tables - Douglas Williams

H8 F to 12 Training Teachers in Tanzania - Jenny Clark

H9 F to 12 Mathletics ‘Where to Start and Course Selection’ - Claire O'Connor, Julie Thompson

H10 F to 12 Preserving the Past and Passing on the Best - Publishing for Mathematics Teachers - Bill Healy

H11 1 to 4 Consolidating Basic Number Facts Through the Use of Card Games - Linda Baron

H12 1 to 8 Making Maths Marvellous with Manchester and Manipulatives - Gabrielle West

H13 3 to 8 Grouping for Problem Solving: ‘Same Pace of Thinking’ - Dr Gaye Williams, Judy Harrington, Sharon Goldfinch

H14 3 to 10 Using Excel to Create Statistical Displays - Jean Arnott

H15 4 to 10 15 Top Tips to Re-Energise Your Teaching of Mathematics - Greg Warmbrunn

H16 4 to 10 A Problem to Tease You - Prof Derek Holton

H17 5 to 8 To LAF or Not to LAF That is the Question? - Christine Lenghaus, Jason McIntosh

H18 5 to 9 RANTS (and Raves!): Rich Algebra and Number Tasks - Lorraine Day

H19 5 to 10 Online Maths Resources - Hang Nguyen

H20 5 to 12 Spreadsheets - The Ultimate Maths Tool - Glenn Sullivan

H21 7 to 8 An Introduction to Programming in Scratch - Jan Honnens

H22 7 to 8 Quiz-it Maths! A Trivia Show Mixing Pop Culture With Maths - Pete Curry, David Warneke

H23 7 to 10 Differentiating Maths Teaching at Secondary Level - Dr Ian Lowe

H24 7 to 10 Using Qedoc on Netbooks to Provide Multimedia Differentiation with LMS Student Tracking - Damien Bushby

H25 7 to 10 The Evolution of the Turtle from LOGO to Lego Mindstorms Robots - Nathaniel Bradshaw

H26 7 to 10 Maths Magic and Puzzles Worked Into a Year 9 Program - Brian Lannen

H27 7 to 10 MATHOMAT, School Project Day and Creative Drawing at Year 8 - Tanya Jones, John Lawton

H28 7 to 10A assessON - Assign, Monitor and Track Student Progress with ease - Shirley Sharpley, Emmanuel Azali

H29 7 to 12 You Sunk My Space Ship! - Hayden McQueenie, Chris Ly

H30 7 to 12 What's an English Teacher Doing in a Mathematics Classroom? - Dr Ray Williams

H31 7 to 12 Taking a Chance - Personalised Maths in Action - Shane O'Connor, Roslyn Mullins

H32 8 to 12 Mathematical Pedagogy - Traditions, Technology and Nspired Lumeracy - Rama Ramakrishnan

H33 9 to 10 Expansion and Factorisation - Stephen Swift

H34 9 to 12 Mathematica™: Pandora’s Box or Classroom Empowerment II? Curriculum Development with Mathematica™ - Dr Brenton Groves

H35 9 to 12 High-Speed Beanie Kids and Quadratic Functions - Anthony Harradine


H37 10 to 12 Hands-On ClassPad Tips and Tricks for Upper School Teachers - Charlie Watson

H38 10 to 12 It's Christmas! Let's Celebrate and Pop a Cork… or Twol! - John Bament

H39 10 to 12 Ti-Nspire CAS Notes Application - A Hidden Treasure - Neale Woods

H40 10 to 12 Using Mathematica in the Classroom - By Teachers for Teachers - Karen Reid, Carmen Popescu-Rose

H41 11 to 12 Cubics and Tangents - Shane Dempsey, Peta Taylor

H42 11 to 12 Java Applets in Teaching Calculus - Yuriy Verkhatsky

H43 11 to 12 SACs for Years 11 and 12 - Steve Morris
AK1 Exploring the Mathematics in the World’s Great Buildings
Keynote
Dr Jeanne Carroll - Victoria University, VIC
Years: F to 12

Architecture is the place where humans can really express their sense of geometry in creating structures of great beauty. In this session the mathematics underlying the creation of some of the world’s most spectacular and interesting buildings is explored.

Jeanne currently works at Victoria University as a lecturer in Maths Education and Positive Education. She is currently involved in working with pre-service teachers in schools across the western suburbs of Melbourne, in remote Central Australia, Beijing and Timor Leste.

AK2 Innovative Teaching With Technology In The Light Of The Theory Of Distributed Cognition
Keynote
Dr Pumadevi Sivasubramaniam - Teacher Education Institute, Raja Melewar Campus, Malaysia
Years: 1 to 7

The presentation will addresses ‘Technological Pedagogical And Content Knowledge’ (TPACK) the specialized knowledge that teachers must acquire in order to use technology in their instructions effectively. The impact of technology on the students learning process is then discussed based on the theory of distributed cognition. The theory of distributed cognition will also be used to explain the importance of the power of the tool used in the teaching and learning process. Examples to illustrate the application of technological pedagogical and content knowledge with the use of the graphing calculator and a dynamic geometry software to create innovative instruction will also be provided in the presentation.

Pumadevi is currently a Teacher educator in the Teacher Education Institute, Raja Melewar Campus in Negeri Sembilan, Malaysia. At the Institute she is a lecturer for the Bachelor of Education Programme. She is also currently involved in secondary and primary school projects in Negeri Sembilan, Malaysia.

A3 Working Mathematically With Infants
Workshop
Douglas Williams - Black Douglas Professional Education Services, VIC
Years: K to 2

Children learn more and teachers love it. Developed by teachers who are engineering their classrooms to enhance children’s number sense, Working Mathematically with Infants splices Threaded Activities from Calculating Changes with Investigations adapted from Mathematics Task Centre and Maths300. Threading is a teaching technique using rich, differentiated activities for small amounts of time often. The workshop introduces you to these activities and investigations, and the planning model teachers have developed to implement them. Mathematical conversation and learning in community - whole class and small groups - are key features of the learning environment.

Not repeated

A4 Incorporating Higher Order Thinking in the Primary Mathematics Classroom
Workshop
Dr Catherine Attard - University of Western Sydney, NSW
Years: K to 6

In this session participants will engage with a range of activities and ideas that promote higher order thinking in the primary mathematics classroom. The activities explored provide opportunities for students to address the Proficiency strand of the Australian Curriculum while promoting positive student engagement with mathematics.

Not repeated

A5 Empowering Teachers in New Ways
Lecture
Commercial Presentation
Alexander Young - Ingenious Technological Enterprises, TAS
Years: K to 7

This paper will introduce you to the concept of digital rubrics, a methodology that enables the teaching and assessment of deep learning. Readers will see how teachers can:

1. Improve their ‘assessment for learning’ through the innovative use of their school photocopier as a high speed scanner obtaining exceptionally powerful insights into their assessment of written responses and
2. Measure ‘the effect size’ of their teaching.
3. Reduce their workload and at least double their students’ rate of learning.
4. Identify gaps in student learning not observable under conventional assessment.
5. Quantify question quality.

Repeated as F3

A6 Big Ideas! Have You Got Any?
Workshop  Years: K to 10
Juanita Blades - Mowbray Primary School, TAS
Janette Neilsen - Invermay Primary School, TAS
Trish Boon-Smith - Rocherlea Primary School, TAS

Driven by a mission to implement sustainable improvement in mathematics teaching practice, based on high quality professional learning, and aligned with a vision of excellence, where do you start? How do you create a truly inspirational network that drives improvement of teaching and learning in mathematics in classrooms? Learn how a network of mathematics teacher leaders, from the East Tamar Federation of schools, in northern Tasmania utilised National Partnerships funding to deliver sustainable improvement in teaching practice. This incorporated the development and delivery of a professional learning package, based on the research and theory of Professor Di Siemon’s Big Ideas in Number. The team will share the ‘how to, highlights and hiccups’ of their journey and the theory and research base they have drawn upon. The audience will engage in examples of professional learning activities (e.g. games/literature) that were used to align the language and shared purpose of the Federation Network Leadership team and staff.

Not repeated

A7 Personalising Maths Learning Using iPads in the Early Years
Workshop  Years: F to 2
Helen Edmonds - Concord School, VIC
Pam Wright - Concord School, VIC
Annemarie Holmyard - Concord School, VIC
Neschelle Castillo - Concord School, VIC

Teachers will participate in the Concord School experience by investigating multiple ways to personalise maths learning in the Early Years setting. The school has undertaken extensive action research to investigate the impact of iPads on student learning and pedagogy. Participants will be strongly facilitated in their professional learning and will leave the session with a wealth of ideas, resources and skills for using iPads effectively in their Early Years maths teaching.

Note: We will supply a pod of 10 iPads for the session - if participants have their own iPad please bring it along fully charged.

Repeated as F4

A8 Transforming the Way Students Understand Mathematics Using Manipulative Materials
Workshop  Years: F to 3
Rachel Kennedy - Oxford University Press, VIC

Commercial Presentation

Developing early number ideas is complex and is frequently underestimated. A multi-sensory approach to mathematics, using structured apparatus, supports students to build a strong concept image, leading to a deeper understanding of number ideas and number relationships. The Numicon Approach grew out of a classroom-based research project founded in the daily experience of intelligent children having real difficulty with mathematics. This interactive session will give direct experience of the Numicon materials and approach and will provide educators with the opportunity to reflect on their pedagogy, and support them in processing new and challenging ideas.

Repeated as F5

A9 Fluency in Number
Workshop  Years: F to 6
Ann Rasmussen - Yarrunga Primary, VIC
Judy Powell - Yarrunga Primary School, VIC
Melissa Campbell - Yarrunga Primary School, VIC

Presenters will share simple tasks that can be used successfully on a daily basis in any class to develop fluency in number. They will demonstrate how to differentiate a task to meet the needs of all students in your class.

◊ As Primary Maths Specialists, the team of presenters are currently working as classroom teachers as well as mentors and coaches across the school.

Repeated as B5
A10  Really Engaging Maths (REM)  
Workshop  Years: F to 6  
Daniel Murphy - Deer Park West Primary School, VIC  
Amanda Portelli - Deer Park West Primary School, VIC  
Kate Wilkins - Deer Park West Primary School, VIC  

Have you ever thought how you could bring the outside environment into your maths classroom? Mathematics doesn’t just have to be taught within the four walls of your classroom. This session provides teachers with engaging hands-on activities which links mathematics to a student’s everyday environment. Key concepts will be learnt through children exploring their environment and applying various mathematical skills to solve real life problems.  
Not repeated

A11  Lesson Study at Kororoit Creek Primary School  
Workshop  Years: F to 6  
Assoc Prof Colleen Vale - Deakin University, VIC  
Dr Wanty Widjaja - Deakin University, VIC  
Hannah Jordan - Kororoit Creek Primary School, VIC  
Anita-Louise Cory - Kororoit Creek Primary School, VIC  
Dane Hamey - Kororoit Creek Primary School, VIC  

There is growing worldwide interest in Japanese Lesson Study as a form of professional development, with large scale adaptations of Lesson Study taking place in many countries around the world. This presentation will describe a Lesson Study project being carried out in one of three Victorian schools participating in a network Lesson Study project in 2012. It will illustrate the typical Japanese structured problem solving research lessons that form the basis for Lesson Study, and discuss how the research lessons were planned, the role of the teacher research team, the teacher of the research lessons and other teachers who observed the research lesson and the outcomes of the post-lesson observation discussion in this Lesson Study project. As well we will identify issues relating to the adaptation of Lesson Study as a means of professional development in Victorian primary schools.  
Not repeated

A12  Literacy in Mathematics  
Workshop  Years: F to 7  
Donna Yates - Te Toi Tupu, Cognition, Mangonui, North Island, New Zealand  

Looking at pedagogy and strategies in literacy and how to transfer them into your Mathematics. Using books and stories to teach mathematics through engaging students to explore and problem solve within a context. We will be looking at books, and exploring some examples. Also a look at using ICT to help improve Mathematical Language.  
Repeated as B7

A13  “I Just Knew It!” Communicating and Reasoning Tips  
Workshop  Years: F to 12  
Tierney Kennedy - Consultant, QLD  

Have you ever asked students, “So how did you get your answer?” and heard back, “I just knew it”? This workshop addresses common reasoning difficulties such as  
1. Students who work out the answer in their heads and have difficulty putting the steps down on paper, including highly intelligent students and those with Asperger’s syndrome, and  
2. Students with low literacy levels who have difficulty writing about their mathematical reasoning.  
It gives great tips and practical strategies for teachers to use with individuals and also with whole classes.  
Not repeated

A14  Mathletics 'Where to Start and Course Selection'  
Computer Workshop  Years: F to 12  
Claire O’Connor - 3P Learning, NSW  
Julie Thompson - 3P Learning, NSW  
Commercial Presentation  
This course is designed as an introduction to teachers new to using Mathletics. Its aim is to ensure teachers are able to confidently navigate their way around the Student Centre and the Teacher Centre. Teachers are shown how these two areas of the program can be used to complement contemporary mathematical teaching methods supporting engagement, mathematical exploration, concept clarification, collaborative learning and performance assessment. Further, teachers are shown how to align the programs course content to state based learning outcomes and specific teaching plans.  
Repeated as H9
A15 Preserving the Past and Passing on the Best - Publishing for Mathematics Teachers
Lecture
Bill Healy - Kilbaha Multimedia Publishing, VIC

Commercial Presentation
During a career in the classroom a mathematics teacher creates thousands of pages of resources for students. Sadly, much of this work in both printed and electronic format is lost when mathematics teachers resign or retire from teaching. Kilbaha Multimedia Publishing has started a commercial project to preserve and distribute the best resources created by today’s classroom teachers. On a dedicated website http://top100schoolresources.com.au, teachers will offer their resources for sale to schools. Would your favourite mathematics lesson make the top 100? Come along to see how it will work and perhaps be published for the first time.

Note: Laptops to access the website will be useful.

A16 Approaching Mathematics Through Rich Tasks
Workshop
Fiona Fox - Cognition Education Ltd, Auckland, New Zealand
Deb Reeves - Waikato University, New Zealand

What is a rich mathematical task and why would I want to use them in my mathematics lesson? Where can I find rich mathematical tasks for Years 1-8? This is a practical hands-on workshop where we will examine what a rich task is and how we can take a task and make it richer. We will look at how we can support, elicit and extend children’s thinking methods referring to Judith Fraivillig’s work around this. You will take away useful rich tasks across the mathematics strands that you can use in your school. A very fun, practical workshop.

A17 Pattern & Structure - Based on Joanne Mulligan’s Work With Early Years Children
Workshop
Marilyn Holmes - University of Otago, New Zealand

Joanne Mulligan, recently working in New Zealand, shared her ideas about young children’s ideas of pattern and structure. She mentions that pre-school and school based intervention focused on patterning can lead to a significant improvement in mathematical outcomes. This workshop will look at some of the practical ideas that teachers can use in their classrooms. Although aimed at teachers of young children there are ideas for teachers of older children who experience difficulty in mathematics learning.

A18 Mental Thinking Using ‘Make The Target Number Strategy’
Workshop
Richard Korbosky - Maths Association of WA, WA

In the classroom we are constantly asked to gain insights to whether students understand the mathematics they are using. This session introduces participants to the ‘make the target number strategy’ which is a strategy that can be developed for Year 1 to 8+. The ‘make the target number stratagy’ sets up a number of organised activities which give students the opportunity to show how they mentally calculate, calculate in written form or calculate with a calculator. Mathematical ideas associated with the Year 1-8 ‘make the target number strategy’ include whole numbers, money, decimal numbers, indices, perimeter, area and the four operations. Mathematics ideas in this session such as number, mental thinking, fluency, problem solving and reasoning will be linked to the Australian Curriculum. The strategy can be used as a whole classroom activity, as an individual activity for differentiating the classroom and most important as an assessment strategy.

A19 Maths Enrichment in Cambodia
Workshop
Isaac Nativ - VIC

Teachers who volunteer to teach in 3rd world countries usually feel they are going to save the world, or at least the standards of mathematics in that part of the world. Actually, doing a ‘teaching round’ in remote schools in countries like Cambodia is the fastest, though not the easiest, way to become a better teacher. A better learner to be precise... The presentation will include the personal experiences from the teaching period, in particular what can you do when most of your students don’t speak a word of English. We shall briefly go over the mathematical games and problems that seemed to work best. Useful tips and contact details will be given to teachers who might want to do same in the future.
A20  Higher Order Thinking Tasks for Low Achievers in Mathematics
Lecture
Pearlyn Gan - National Institute of Education, Singapore
Mei Yun Ng - Fairfield Methodist School (Primary), Singapore

Previous studies have found that low achievers make considerable progress when they engage in tasks that foster higher order thinking skills. In this study, three higher-order thinking tasks related to the topic of fractions were assigned to students of mixed ability in Primary 3. We are interested to find out whether these tasks are effective in helping the low achievers understand fractions better and if low achievers can perform higher order thinking tasks as well as high and middle achievers.

Repeated as D15

A21  Knowing What Works With Teaching Fractions
Workshop
Jude Callaghan - University of Canterbury, Christchurch, New Zealand
Elizabeth Johnson - University of Canterbury, Christchurch, New Zealand

Fractions have always represented considerable challenge for students. This workshop will deepen teachers’ understanding of the key progressions in the teaching of fractions from Years 3-6. A range of practical, hands-on activities that have been proven in the classroom setting will be explored. Teachers will leave this workshop with a clear understanding of effective classroom practises that will enable them to personalise programmes for a diverse range of learners.

Repeated as B18

A22  Visual Representations of Learning Intentions Drawn from the Australian Curriculum Elaborations in Mathematics
Lecture
Donna Ludvigsen - Grampians Region DEECD, VIC
Annika Dalgleish - Black Hill Primary School, VIC

By using visual representations of learning intentions teachers are able to plan the explicit teaching of concepts as well as connecting practice activities and application tasks to this teaching. This workshop presents the action learning journey of a Professional Learning Team as they develop visual learning intentions drawn from the elaborations in the Mathematics learning area of the Australian Curriculum.

Repeated as B21

A23  The BIG F - All About Fractions - Consolidation of the Number System and an Introduction Into the World Of Algebra
Workshop
Ian Bull - St Kevin’s College, VIC

What is it about fractions that strikes fear into the experience of most of our students? Why are fractions so hard to teach and what is it about fractions that makes them such a challenge for students to understand? Fractions are everywhere around us and often they are more convenient to use than decimals - rather than eating a third of a pizza, eating 0.33333..... of a pizza is a clumsy way of expressing that quantity. Fractions are just numbers but according to research how can they be best be presented in the classroom - come and play with some activities to find out.

Note: Participants need to bring some coloured pencils and a pair of scissors.

Repeated as B22

A24  The TPACK Model Within a Mathematics Education Context
Lecture
Dr Ahmad Samarji - Victoria University, VIC

The Technological, Pedagogical and Content Knowledge (TPACK) model is an emerging one which adds technology as a lens and context to the Pedagogical and Content Knowledge (PCK) model. The TPACK model reflects the need that teaching and learning should be viewed, conceptualised, and re-conceptualised from a “21st Century Digital Lens”. Technology is no longer an ad-hoc visitor that teachers can invite or exclude. Technology is integrated in students’ and teachers’ lives from A-Z. Hence, there are no excuses for it not being integrated across the teaching and learning of all disciplines, including mathematics. This presentation shows examples of three mathematics lessons (primary, early secondary, and VCE) underpinned by the TPACK model in a manner which actively engages students and promotes mathematics teaching and learning.

Repeated as F22
A25 Problem Solving
Workshop
Daniel Avano - Museum Victoria - Scienceworks, VIC
Bronwyn Quint - Museum Victoria - Scienceworks, VIC

In this session participants will work through a series of hands-on problems (real-life situations) to test out their problem solving skills. This will be followed by a discussion about practical ways of going about solving problems. Participants will then prepare their own individual problem solving checklist. It’s a great way to introduce problem solving in primary or lower secondary school. This session is based on a program available to schools at Scienceworks. Participants will also be given a quick overview of other maths resources available from Museum Victoria.

Repeated as B24

A26 Using Self-Assessment Tools to Inform Your Teaching in Middle Years Classrooms
Workshops
Meredith Clegg - Hume Central Secondary College, VIC
Justine Johnston - Hume Central Secondary College, VIC

Formative and summative assessments can be more than pre and post testing. It is possible to gather informative data through the use of student self-assessment tools. This workshop will explore how to develop and use tools such as capacity matrices, vocabulary lists, progress passes and little books to gauge student understanding and make the learning explicit to students. Middle year’s students will readily engage when given the opportunity to express themselves and these tools will enhance that, and provide valuable assessment information for the teacher. Participants will be given an assortment of tools to utilise in their own classrooms.

Repeated as B26

A27 The Mathematics of Planet Earth
Lecture
Janine McIntosh - Australian Mathematical Sciences Institute (AMSI), VIC
Lachlan McIntosh - Undergraduate Student, University of Melbourne, VIC

In 2013 we celebrate the International Year of Mathematics of Planet Earth. The four themes include: A Planet to Discover, A Planet Supporting Life, A Planet Organized by Humans and A Planet at Risk. In this session we will explore the mathematics involved in topics ranging from meteorology and climate to solar systems, from ecology to transport networks and from telecommunication to epidemiology.

Repeated as B27

A28 Delivering Differentiation - Including Every Child
Lecture
Yvonne Reilly - Sunshine College, VIC
Jodie Parsons - Staughton College, VIC

This workshop will expose participants to an effective model of practice in which teachers plan and prepare the delivery of fully differentiated and inclusive maths lessons suitable for a middle years’ classroom. The philosophy for this model is the empowerment of all learners to choose a task which is ‘just right’ for them.

Note: Please bring a USB for resources.

Repeated as C29

A29 Connecting Mathematical Concepts Through Collaborative Problem Solving
Workshop
Caroline Mazurkiewicz - Western Metropolitan Region, VIC
Kathryn Palmer - Melton Network, VIC

Research has shown that student learning is improved when connections are made with prior learning. Providing the opportunity to collaborate and discuss mathematical concepts is also vital for student learning. This workshop will provide participants with a research based model for developing and using collaborative problem solving to connect ideas, differentiate the teaching and learning and engage students with a focus on students in Years 5 to 10. Links will be made with Australian Curriculum and participants will receive a range of resources to trial in their classes.

Note: Please bring a USB stick to collect resources.

Repeated as B28
A30 From NFI to WTF: Real Higher Order Thinking Skills a Strategic Shift
Workshop  Years: 5 to 12

Prof Martin Westwell - Flinders University, SA
Kristin Smith - Flinders University, SA
Deb Lasscock - Flinders University, SA

Not Following Instructions to Willing to Fail. Bloom’s Taxonomy has served us well and now with the shift in the Australian Curriculum from teaching to learning what does the future of higher order thinking skills look like? Shifting the focus from what we teach to what students learn will require a more evidence informed approach. This workshop provides both research and practical ideas to reflect on the thinking and understanding in our mathematics classrooms. This is a stand-alone workshop with links to other workshops within the conference.

Note: While this workshop is targeted at Years 5-12 teachers of other year levels are welcome.

A31 Using GeoGebra to Enhance Teaching of Primary School Mathematics
Lecture  Years: 6 to 7

Foo Him Ho - National Institute of Education, Singapore,
Cher Hern Koh - Pei Hwa Presbyterian Primary School, Singapore

GeoGebra as an open-source Dynamic Geometry Software has been gaining popularity amongst secondary school mathematics teachers in Singapore. However, the use of GeoGebra in our primary school mathematics teaching has been rather minimal and superficial. In this presentation we will demonstrate and explain with a few suitable problems on geometry and ratio, how teachers could enhance pupils’ learning by using GeoGebra constructions and applets to engage pupils in mathematical problem-solving and explorations in an interactive and collaborative learning platform.

Repeated as D26

A32 Supporting Struggling Students: Place Value and Fractions, Years 7-8
Workshop  Years: 7 to 8

Anita Chin - Anita Chin Mathematics Consultancy, NSW

The development of place value understanding begins in the early years with part-part-whole ideas and progresses to partitioning numbers in standard and non-standard forms. However, many students lack the ability to represent numbers in more than one way. The fraction concept is difficult to teach as it is composed of multiple ideas and can be represented in various notations. So, how can we help students build connections between concepts and plug gaps in their learning? This hands-on workshop will examine the ‘big ideas’ in ways that are accessible and engaging for all students using a concrete-pictorial-abstract approach. Black line masters provided.

Repeated as B30

A33 Constructing Animated Proofs Using a Dynamic Geometry Software
Computer Workshop  Years: 7 to 10

Dr Ng Wee Leng - National Institute of Education, Nanyang Technological University, Singapore

Dynamic geometry software (DGS) refers to computer programs which allow one to create and then manipulate geometric constructions. Many DGS packages offer graphing utilities as well. DGS, which is suitable for implementation in a discovery-learning environment or for demonstration purposes, is particularly common in secondary school geometry classrooms. In this workshop we shall explore the use of DGS in constructing animated geometric proofs. The DGS used in this workshop is the Geometer’s Sketchpad.

Repeated as C35

A34 Getting Rid of the Textbook: Theoretical Basis and Practical Experience
Lecture  Years: 7 to 10

Lachlan Yeates - Warracknabeal Secondary College, VIC
Hayley Paproth - Warrnambool College, VIC

This presentation looks at how textbooks are traditionally used in secondary mathematics classes and discusses the experiences of two teachers from different schools who have moved away from textbook based instruction. Options that exist to replace roles currently filled by textbooks, especially in 1-to-1 classrooms, are examined along with some of the challenges of moving away from a traditional model. This presentation will be useful to teachers in schools that are moving towards 1-to-1 models as well as those who are interested in exploring alternative teaching methods.

Repeated as E32

A35 Action Research and Its Impact on Student Outcomes
Lecture  Years: 7 to 10

Michelle Moses - Elisabeth Murdoch College, VIC

Action research in the mathematics classroom can help teachers develop an understanding of which approaches are effective to improve student-learning outcomes. At Elisabeth Murdoch College an action research project was
conducted in fraction multiplication to determine whether using the area model was an effective representation to improve students learning outcomes. Does using mathematical representations, engaging in discussion and drawing on students’ informal knowledge make a difference in their learning outcomes? How effective are students in retaining their mathematical knowledge? This session will focus on results, statistical analysis as well as student worked examples to determine the effectiveness of the area model in teaching fraction multiplication.

A36   Teach Australian Curriculum Maths for Understanding - Secondary

Lecture

Dr Ian Lowe - The Mathematical Association of Victoria, VIC

One challenge to teaching maths is drawing together all the available resources around the structure of the Australian Curriculum. Ian has made this available in “Teach Maths for Understanding”, free to MAV members on <www.mav.vic.edu.au>. Thousands of hyperlinks include Hands-on, ICT, Teaching and Whole-class investigations for all topics at all levels catering for many learning styles. Another challenge is planning for differentiation. Teach Maths for understanding has organised the material into Differentiated Unit Plans. For most classes TM4U makes resources for six Australian Curriculum levels accessible.

Not repeated

A37   Five Minute Activities

Workshop

Kim Streek - CRC Sydenham, VIC
Ingrid Jahnke - Ex Mowbray College, Town Centre Campus, VIC

We will supply a number of five minute activities to use in the Middle school classroom. However, the aim is for all participants to bring one or two activities they currently use to make a ‘bank’ of them for all participants to take home to use in their own school.

Note: Please bring one or two five minute activities you currently use in your Middle school classroom to share with the other participants.

Repeated as C39

A38   MATHOMAT, School Project Day and Creative Drawing at Year 8

Workshop

Tanya Jones - Emmanuel College, VIC
John Lawton - Objective Learning Materials, VIC

MATHOMAT is a widely available, inspiring, resource. This workshop presents a range of creative drawing possibilities with MATHOMAT including: investigation of symmetry, construction of 3D models from nets, the use of bearings and scale rulers with maps, and representation of 3D shapes on paper. There will be a presentation of the creative work by students at Emmanuel College using MATHOMAT to explore tessellations with mixed, and boys only, groups of 50 Year 8 students on their school project day. The session concludes with reflection and discussion about the ability of non assessed school projects to foster relational understanding of mathematics.

Repeated as H27

A39   The Pedagogical Advantages of the Wireless Networked Classroom

Workshop

Dr Ray Williams - St Mark’s Anglican Community School, WA

This workshop provides participants with an opportunity to actively experience all aspects of the interactive capacity of the wireless connection of TI-Nspire devices (both calculator and netbook) to the teacher’s computer in the classroom. The ability to place a student in the role of ‘teacher’ provides a most useful degree of freedom for the teacher and results in immense pedagogical gains in the classroom.

Note: Laptops not essential, but participants encouraged to bring them.

Repeated as B37

A40   Using SOLO Taxonomy in the Mathematics Classroom

Lecture

Mitchell Howard - Lincoln High School, New Zealand

SOLO taxonomy is a way of structuring thinking. In New Zealand high schools, SOLO is used as the framework for national assessments in senior mathematics. At Lincoln High School SOLO taxonomy has been adopted throughout the school as a common language of learning. The mathematics department uses SOLO taxonomy for planning units of work, differentiating and structuring of open ended tasks, scaffolding thinking, and providing both feedback and feed-forward. The intent of this session is to give a big picture of what SOLO taxonomy is and provide some practical examples of how it can be used in mathematics classrooms.

Repeated as F35
A41  FX Draw Q&A
Lecture  Years: 7 to 12
Paul Hooper - Efofex Software, WA
Commercial Presentation
A session of hints, tips, how to's, questions and answers for FX Draw. This session is suitable for both new users of FX Draw and gurus.
Repeated as G36

A42  Using CAS as a Teaching Tool for Linear Functions to Linear Programming
Workshop  Years: 8 to 12
Jenny Curtis - St Mark's Anglican Community School, WA
This session highlights the enhancements to the graphing capabilities of the latest TI-Nspire OS (V3.2). The session will highlight the versatility this gives to exploring all types of linear graphs in middle school leading to more exciting ways to teach linear programming in senior school.
Note: TI-Nspire calculators will be used in this session and loan calculators will be available.
Repeated as B41

A43  Never Used a ClassPad and Need to Know How?
Workshop  Years: 8 to 12
Anthony Harradine - Potts-Baker Institute, Prince Alfred College, SA
This workshop is for those who have never used a ClassPad and would like to learn the fundamentals in a short space of time. You will leave with support materials that will assist you in taking the next step. A tried and proven workshop that will have you using the machine with confidence by the end of the hour.
Note: ClassPads will be available for loan during the session.
Repeated as D40

A44  From Geoboard to CAS Calculator
Lecture  Years: 8 to 12
Michael Chapman - St Mark's Anglican Community School, WA
This session investigates “Pick’s Rule” for finding area using the latest version of the TI-Nspire OS. Either by inspection or by using some clever programming help, participants can work through data capture, graphing and simple algebra to arrive at a neat little proof of the theorem. (No programming skills required!)
Repeated as G39

A45  Mathematica™: Pandora’s Box or Classroom Empowerment I? Teaching with Mathematica™
Lecture  Years: 9 to 12
Dr Brenton Groves - Independent Researcher, VIC
The amount of material on the web is huge: The Virtual Book (10,000 pages); Tutorials, how-to’s and white papers; Alphabetical site index; Wolfram MathWorld (13,086 entries); Wolfram Web Resources (blog.wolfram.com, forums.wolfram.com, www.mathematica-journal.com); Wolfram Education Group Courses; Interactive demonstrations under the Wolfram CDF. Everything can be downloaded for free and Mathematica™ is not required. This presentation will outline a path through the Wolfram maze with selective interactive demonstrations of common mathematical topics. It will be available on the web so teachers can investigate the material at their own pace afterwards.
Repeated as D41

A46  Engaging Foundation Mathematics Students - Some Suggestions
Workshop  Years: 10 to 11
Leah Whiffin - Bendigo Senior Secondary College, VIC
Sue Scott - Bendigo Senior Secondary College, VIC
Running out of ideas for VCAL and VCE Foundation Mathematics. This workshop will provide units of work such as budgeting and kite making that can be easily modified or used in the classroom.
Note: Please bring a USB stick if you would like to receive copies of resources. Similar to a presentation given a couple of years ago.
Repeated as B45

A47  An Introduction to Markov Chains
Lecture  Years: 10 to 12
Prof Terry Mills - Loddon Mallee Integrated Cancer Service, VIC
Markov chains are models that use concepts from probability to describe how a system, such as the weather or the economy, changes from one state to another. The basic ideas were presented by a Russian mathematician A.A. Markov about 100 years ago. These days Markov chains arise in Year 12 mathematics in several States. However, many teachers will not have encountered these objects in their university studies. This presentation provides a gentle introduction to Markov chains. A notable feature is a list of applications that show how these models are
useful in contemporary applied mathematics. This paper is joint work with K.C. Chan and C.T. Lenard (La Trobe University).

Repeated as E43

A48 VCE and the Virtual Learning Network

Computer Workshop

Stuart Payne - Bendigo Senior Secondary College, VIC
Tony Carroll - Bendigo Senior Secondary College, VIC

Students of VCE Specialist Maths and Maths Methods CAS Units 1 to 4 have successfully completed these courses entirely online in 2012, through the Virtual Learning Network established at Bendigo Senior Secondary College. The details of this exciting project, including the structure and organisation, the methods used to develop materials and the results of formal evaluations of the project will be discussed during the workshop. Participants will have the opportunity to explore the learning materials available to students through the Virtual Learning Network site.

Repeated as B48

A49 Kissing in the Mathematics Classroom Using the TI-Nspire CAS!

Workshop

Russell Brown - Educational Consultant, VIC
Rodney Anderson - Moreton Bay College, QLD

Unfortunately the term “kissing” in a mathematical context conjures up circles just teaching each other! In this session we will investigate the relationship between exponential and logarithmic functions together with calculus concepts, to solve, in exact terms, where the general parent functions actually kiss each other. Used as an assessment task this problem ties together many concepts expected at this level using both graphical and algebraic techniques.

Note: Bring your own TI-Nspire or borrow one at the session.

Repeated as F45

A50 Programming Ti-Nspire for Fully Automated Solutions of Mathematical Methods CAS Exam 2 Questions

Lecture

Mehmet Altundal - Isik College, VIC

In this workshop we will create programs with TI-Nspire which can solve some Mathematical Methods CAS Exam 2 questions with one click. After covering essentials of programming with TI-Nspire, participants will start writing their first programs. We will then examine our programs with past exam questions. Participants will leave with programming skills and Ti-Nspire programs that are ready to be used to boost their students in VCE exams.

Note: Please bring TI-Nspire CAS (CX/Clickpad/Touchpad) calculator to this session.

Not repeated

A51 What’s New in the Australian Curriculum for Victorian Mathematical Methods and Specialist Mathematics Teachers

Lecture

Allason McNamara - Mount Scopus Memorial College, VIC
Dr Philip Swedosh - St Leonard’s College, VIC
Dean Lamson - Ballarat Clarendon Grammar, VIC

Philip, Allason and Dean are members of the Specialist Mathematics and/or Mathematical Methods CAS Setting and Marking Panels. They will discuss the new content in the Australian Curriculum and different approaches which could be used to assess this content.

Repeated as B51

A52 studyON for VCE Mathematics - Want to Improve Your Students’ Exam Results?

Computer Workshop

Shirly Griffith - Jacaranda (Wiley), VIC

Commercial Presentation

studyON is the online study, revision and exam practice tool from Jacaranda that recognises the online world in which students live. In this hands-on workshop you will get to test out studyON for VCE Specialist Mathematics Units 3&4, VCE Mathematical Methods CAS Units 3&4 and VCE Further Mathematics Units 3&4. Incorporating myriad learning tools - videos, animations, actual past VCE exam questions, a results tracker, concept screens and interactive study activities - studyON opens the door to a stimulating and flexible learning environment that encourages all students to study how they want, when they want. Participants will also get to engage with the Teacher Edition which allows teachers to monitor and track the progress of students.

Note: Participants will each receive a free access code to a studyON title of their choice.

Not repeated
SESSION A-B: 11:10am - 1:30pm Thursday 6th December

A-B1 Take Real Data Into Your Classroom Using CensusAtSchool (Australian Bureau of Statistics)
Computer Workshop Years: 5 to 10
Mary-Anne Aram - Australian Bureau of Statistics, VIC

Looking for different ways to use and teach statistics in the classroom? In this session teachers will get the opportunity to familiarise themselves with the Australian Bureau of Statistics (ABS) Education Services' free website focusing on CensusAtSchool including new material. We will look at the teacher registration process and the 2012 Questionnaire. You will see how to access CensusAtSchool and Education Services resources, activities and marking rubrics, which are aligned with the Australian Curriculum; as well as datasets and interactive graphs. You get a bumper goodie bag, but be prepared for a fast moving website tour!
Repeated as F-G2

A-B2 Motivating Students & Transforming Teaching with the Classroom Organiser Software
Computer Workshop Years: 6 to 12
Bill Murray - Mentone Girls Secondary College, VIC
Victoria Pichler - Full Circle Education, VIC
Commercial Presentation

Leading teachers in several top Melbourne schools are now using the Classroom Organiser to help prepare lesson and student plans, and to track and report individual students’ progress. Differentiated programmes are easily introduced and students are motivated through being involved in developing their own learning programme. The system encourages teachers to plan ahead and review work in a timely and organised manner, while achieving valuable time savings. Easy tracking and reporting closes the loop for administrators and parents. A variety of sample plans in several subjects are now freely available, as is a 90-day free trial.
Repeated as F-G3

A-B3 The Big Maths Ideas in 14 Poems
Lecture Years: 7 to 12
Helen Prochazka - MTXM Movies, TAS
Maurice Murphy - MTXM Movies, NSW
Adrian Jacobson - MTXM Movies, TAS

Maths is more than measurement and number calculations
More than geometry, statistics and algebra manipulations
So we set out to elucidate its beauty, heart and history
Its concepts, connections and contexts - and do all of this with poetry!
For the economy of a rhyme, has significant potential
To communicate, with feeling, what in maths is quintessential
We hope that our content-rich verses, many teachers will soon find
Are a way to link some big ideas, to a mathematics student’s mind!
Repeated as F-G4

A-B4 Using ‘Algebra Tiles’ to Teach Integers, Expansion and Factorisation
Workshop Years: 8 to 10
Michael O’Reilly - Mill Park Secondary College, VIC
Norrian Rundle - Epping Secondary College, VIC

This double session is an introduction to ‘Algebra Tiles’. ‘Algebra Tiles’ are a hands-on teaching aid used to introduce and teach Middle Years students directed numbers and expansion, and factorisation of algebraic terms. The focus will be on how to introduce and teach algebraic expansion and factorisation using this successful hands-on teaching aid. This will include both linear and quadratic expressions. We will be developing the ideas firstly with integers, and then moving on to algebraic expansion and then factorisation. The ideas of using arrays and the algebra tiles build on the initial work with integers. [This is a repeat of the sessions we offered at the 2009, 2010 & 2011 MAV Annual Conferences.] Detailed notes, including many examples, will be provided. Teaching strategies will be explained throughout the session. We will also provide participants with the templates to cheaply make their own class sets of ‘algebra tiles’.
Note: Participants should bring along a USB Memory Stick.
Not repeated

A-B5 Using TI-Nspire CAS Navigator to Transform a Good Lesson Into a Great Lesson: Revisiting the Surd Spiral
Workshop Years: 9 to 11
Roger Wander - University of Melbourne MGSE, VIC

Experienced teachers will know particular lessons they’ve taught in the past which have really hit the mark. No matter when they were first developed, these good lessons can be improved through judicious use of interactive
mathematics technology. The presenter will show how a lesson/investigation based on surds and geometry (seen at the 2009 MAV December Conference) can be enhanced for increased student engagement and understanding using the interactive features of TI-Nspire CAS CX Navigator hardware and software. Participants will use the handheld calculator (provided) to pose questions and offer solutions within the ‘lesson’ environment, and will discuss how they might adapt their current lessons in a similar manner. Lesson materials will be made available in both printed and electronic form.

Repeated as F-G7

A-B6  Get More TI Inspired!
Workshop
Frank Moya - Educational Consultant, VIC
This is a hands-on workshop where a number of student-centred activities will be presented. These activities will include the use of a number of the less well known features of TI-Nspire CAS, which are user friendly but under-utilised in most schools. New and improved functionality available in the latest version of the operating system will also be discussed. There will be a balance of types of activities presented; some are appropriate for Years 9 and 10, while others are most applicable to VCE.

Note: Bring a USB flash drive / memory stick to get copies of the activities. Loan calculators will be available for those participants who don’t have their own handheld or software.

Not Repeated

SESSION B: 12:30pm - 1:30pm Thursday 6th December

BK1  Differentiation: The Heart of Personalising Learning
Keynote
Nadia Walker - Create Collaborate Educate - Educational Consultant, VIC
Let’s be honest, personalisation is challenging in the busy classroom... so many students, so little time! This workshop will explore ideas around how effective differentiated instruction can enable personalised learning. We’ll explore what personalising learning really looks like in today’s classroom, what are the features of an effective personalised lesson, and what tools and resources can support teachers to make this feasible and manageable in every classroom? In this hands-on workshop, we will look at a range of rich learning tasks allowing for differentiation. We’ll explore how problem solving and open-ended tasks can incorporate many levels of learning. And we’ll look at some easy ways to collect evidence about your students’ learning.

Nadia Walker is an educational consultant with a genuine enthusiasm for high quality teaching and learning, particularly in mathematics. Nadia has experience working with the Victorian Department of Education and Early Childhood Development (DEECD) at a central, regional and network level. She has lead curriculum reform projects in mathematics and been responsible for providing innovative curriculum advice and professional learning. Most recently she developed and implemented strategies, workshops and online support materials relating to the Mathematics Developmental Continuum, the Mathematics Online Interview and Scaffolding Numeracy in the Middle Years. Nadia is a trained coach, working with individuals and teams to achieve excellence in their mathematics programs. Prior to this work, Nadia was a primary classroom teacher, Middle Years Coordinator and Team Leader.

BK2  Orchestrating Productive Mathematical Discussions: A Model for Moving Beyond “Showing and Telling”
Keynote
Dr Mary Kay Stein - University of Pittsburgh, USA
Adopting and setting up high-level tasks in the classroom will not, in and of itself, lead to student success. Teachers also need to learn ways to support students’ engagement with such tasks, including how to steer students’ nascent work on these tasks toward understanding of the key mathematical idea that is the goal of the lesson. In this presentation I will introduce an instructional approach, known as the Five Practices (Smith & Stein, 2011), that focuses on using student-developed work as the launching point of whole-class discussions in which the teacher actively shapes the ideas that students produce to lead them toward more powerful, efficient, and accurate thinking. The intent is to make discussion facilitation more manageable for teachers by purposely de-emphasising the improvisational aspects of discussion facilitation in favour of a focus on those aspects of classroom discussions that can be planned for in advance. Teachers will learn how to anticipate likely student contributions, prepare responses they might make to them, and make decisions about how to structure students’
Mary Kay Stein holds a joint appointment at the University of Pittsburgh as Professor of Learning Sciences and Policy and Senior Scientist at the Learning Research and Development Center. Her research focuses on mathematics teaching and learning in classrooms and the ways in which policy and organizational conditions shape teachers’ practice. Stein’s most recent research examines how curricula can serve as a learning tool for teachers in large-scale improvement efforts.

B3 Hands-on Activities to Engage Every Child

Workshop

Dr Catherine Attard - University of Western Sydney, NSW

This workshop will focus on using, creating and differentiating mathematics tasks that are engaging, innovative, and represent ‘best practice’ for teaching mathematics. Participants will engage in a variety of hands-on activities that can be adapted to suit the needs of diverse learners. All workshop activities will be framed against current research and understandings of the concept of engagement as it relates to primary mathematics teaching and learning.

Not repeated

B4 Developing Flexible Thinkers in the F-3 Mathematics Classroom

Workshop

Richard Korbosky - Maths Association of WA, WA

The ability to think flexibly in mathematics is an important skill to acquire from the start of the mathematics journey. Young students should be given the opportunity to manipulate materials, draw the mathematics sentences. There are many graphic organisers which assist and organise their thinking. This session explores a variety of strategies and will arm the participants to return to the classroom with new ideas about flexible thinking.

Repeated as G5

B5 Fluency in Number

Workshop

Ann Rasmussen - Yarrunga Primary, VIC
Judy Powell - Yarrunga Primary School, VIC
Melissa Campbell - Yarrunga Primary School, VIC

Presenters will share simple tasks that can be used successfully on a daily basis in any class to develop fluency in number. They will demonstrate how to differentiate a task to meet the needs of all students in your class.

As Primary Maths Specialists, the team of presenters are currently working as classroom teachers as well as mentors and coaches across the school.

Repeated as A9

B6 Geometric Thinking Through Geocaching

Workshop

Dr Leicha Bragg - Deakin University, VIC

Geocaching is an exciting global treasure hunt engaging children and adults alike with over 5 million participants worldwide. Geocaching provides a unique educational opportunity to develop students’ geometric thinking through an authentic treasure hunt linking to the local and international community. This session includes an introduction to geocaching and a series of rich tasks developed as part of a Geocaching Program for primary aged children. Come along and discover firsthand some fun geometry activities you and your students will enjoy.

Not repeated

B7 Literacy in Mathematics

Workshop

Donna Yates - Te Toi Tupu, Cognition, Mangonui, North Island, New Zealand

Looking at pedagogy and strategies in literacy and how to transfer them into your Mathematics. Using books and stories to teach mathematics through engaging students to explore and problem solve within a context. We will be looking at books, and exploring some examples. Also a look at using ICT to help improve Mathematical Language.

Repeated as A12

B8 Nurturing the Maths Learner from Concrete to Abstract - Laughing all the Way

Workshop

Rod Cameron - Metung Primary School, VIC

Commercial Presentation

The developmental continuum from fully concrete/manipulative, through fully representational and partially representational, to abstract/algebraic is a clear pathway, and all of your students are somewhere along it. This workshop aims at building the capacity of teacher content knowledge and pedagogical content knowledge through the simple introduction of new learning materials designed to allow the deliberate and strategic movement of learners
from concrete (metric pattern blocks), through fully representational (1:1 templates of the metric pattern blocks) to partially representational (different scales) to abstract (creating and using rules with no visual representation). Active fun for all, with free resources and online support. The author has developed these materials while working with NESB communities in Papua New Guinea, and as such, this is a commercial presentation.

Repeated as G11

B9 Transform Your Classroom with Online Curriculum, Assessment and Reporting - Cambridge HOTmaths

Workshop

Sharon London - Cambridge HOTmaths, NSW
Victoria Cook - Cambridge University Press, VIC

Commercial Presentation

Explore an exciting range of curriculum content, activities, games, investigations, assessment material and reporting for Australian Curriculum F-10A. Cambridge HOTmaths can also be used with a range of mathematics textbooks, providing exceptional integrated text and online programs. Find out about the powerful Test Generator, the Search/Research tools, and the Class and Homework Task Management system, supporting students of all ability levels and learning styles. Find out how Cambridge HOTmaths is being used for classrooms with and without technology, for 1-to-1 programs, for homework, for study, research and personalised learning.

Repeated as C11

B10 A Lesson Study Approach to Professional Learning

Lecture

Rob Park - Park Education Consultancy, VIC
Stan Koullas - Keilor Downs Secondary College, VIC

Research has shown that the most effective professional learning involves teachers working together, sharing ideas and discussing observed lessons and student work. Facilitated by the Network Numeracy Coach, many teachers of secondary maths in the Keilor/St Albans Network have been involved in Lesson Study professional learning over the past year. This session outlines the approach taken, the benefits gained and the lessons learnt from the process. There will also be an opportunity to discuss the experience with some of the participants.

Repeated as F14

B11 Training Teachers in Tanzania

Lecture

Jenny Clark - Baimbridge College Hamilton, VIC

Volunteering overseas in a developing nation can be a wonderful experience both personally and professionally. I had a 12 month placement as a teacher trainer in the Kagera Region of Tanzania in 2010/11. While there I worked with teachers, education administrators, teacher training college lecturers and students to improve the teaching and learning of mathematics. Teachers are desperate for in-service training in participatory teaching methods and creation of teaching aids - you could help them! This session is to give anyone interested in volunteering a taste of what a positive and satisfying experience it can be.

Repeated as H8

B12 Fractions - The Pieces Get Skinnier and Skinnier!

Workshop

Anne Milburn - Cognition Education Ltd, Auckland, New Zealand
Alison Howard - Cognition Education Ltd, Auckland, New Zealand

Do your students find fractions confusing?
Is their understanding of fractions quite fragile?
Are you unsure how to help them?

If so, this practical and hands-on workshop is for you! We will explore children’s fractional misconceptions through a range of activities and games. The focus of this workshop will be on supporting students aged from 5 to 8 years.

Repeated as C16

B13 Approaching Mathematics Through Rich Tasks

Workshop

Fiona Fox - Cognition Education Ltd, Auckland, New Zealand
Deb Reeves - Waikato University, New Zealand

What is a rich mathematical task and why would I want to use them in my mathematics lesson? Where can I find rich mathematical tasks for Years 1-8? This is a practical hands-on workshop where we will examine what a rich task is and how we can take a task and make it richer. We will look at how we can support, elicit and extend children’s thinking methods referring to Judith Fraivillig’s work around this. You will take away useful rich tasks across the mathematics strands that you can use in your school. A very fun, practical workshop.

Repeated as A16
B14  Pattern & Structure - Based on Joanne Mulligan’s Work With Early Years Children
Workshop  Years: 1 to 7
Marilyn Holmes - University of Otago, New Zealand
Joanne Mulligan, recently working in New Zealand, shared her ideas about young children’s ideas of pattern and structure. She mentions that pre-school and school based intervention focused on patterning can lead to a significant improvement in mathematical outcomes. This workshop will look at some of the practical ideas that teachers can use in their classrooms. Although aimed at teachers of young children there are ideas for teachers of older children who experience difficulty in mathematics learning.
Repeated as A17

B15  From NFI to WTF: Creating an Engaging Learning Community
Workshop  Years: 1 to 8
Prof Martin Westwell - Flinders University, SA
Kristin Smith - Flinders University, SA
Deb Lasscock - Flinders University, SA
From Not Following Instructions to Willing To Fail. A Community of Inquiry shifts the ‘power’ in the classroom from teacher to students. It creates an environment in which students choose to question, challenge and discuss key ideas. Take home a process where students are free to articulate what they are wondering, drive towards authentic higher order thinking and delve into students’ mathematical understandings. This is a stand-alone workshop with links to other workshops within the conference.
Note: While this workshop is targeted to Years 1-8 it is open to all participants.
Not repeated

B16  ACER’s Online Assessment and Reporting Platform
Lecture  Years: 1 to 10
Mette Høeyberg - ACER, VIC
Julia Inglis - ACER, VIC
Commercial Presentation
We will demonstrate features of ACER’s online assessment and reporting platform which has been operating across Australia since February 2012. We will be introducing some exciting new features in the second half of 2012. One of the assessments currently on this platform is the Progressive Achievement Tests in Mathematics (PATMaths). This assessment will be the focus of the second half of this presentation. PATMaths is ACER’s best selling test of achievement in mathematics. 2013 will see the release of the PATMaths Fourth Edition. This session will discuss the differences in the fourth edition and show how it will provide objective information about mathematics achievement levels to inform teaching practice and monitor progress.
Not repeated

B17  Planning for Retirement
Lecture  Years: 1 to 12
Edward Patterson - Retirement Victoria Pty Ltd, VIC
Commercial Presentation
Retirement Victoria’s seminar program is directed to those close to retirement and to those positioning for retirement in the medium term. We provide a framework for thinking which assists people to build an efficient model for retirement. The model takes account of planning periods, lifestyle objectives and the building of an efficient income and capital strategy.
Not repeated

B18  Knowing What Works With Teaching Fractions
Workshop  Years: 3 to 6
Jude Callaghan - University of Canterbury, Christchurch, New Zealand
Elizabeth Johnson - University of Canterbury, Christchurch, New Zealand
Fractions have always represented considerable challenge for students. This workshop will deepen teachers’ understanding of the key progressions in the teaching of fractions from Years 3-6. A range of practical, hands-on activities that have been proven in the classroom setting will be explored. Teachers will leave this workshop with a clear understanding of effective classroom practises that will enable them to personalise programmes for a diverse range of learners.
Repeated as A21
B19 Using the Modified Lesson Study to Develop Students’ Relational Thinking
Lecture
Lei Bao - Alvie Consolidated School, VIC
Dr Max Stephens - University of Melbourne, VIC

This presentation will showcase my research on Relational Thinking based on Lesson Study, conducted in a small rural primary school in western Victoria. Throughout the cycles of Lesson Study, we found that Lesson Study made a difference to students’ achievement and appreciation of relational thinking and for teachers’ content knowledge as well.

Not repeated

B20 Maths With Attitude: Take a 2nd Look
Workshop
Douglas Williams - Black Douglas Professional Education Services, VIC

In time for the new Australian Mathematics Curriculum with its focus on “... increasingly sophisticated and refined mathematical understanding, fluency, logical reasoning, analytical thought and problem-solving skills”, Maths With Attitude has been revised and strengthened and is now available in its second edition. It unites tasks and Maths300 into a core curriculum for Years 3-10. Investigations are central. Skills are developed and practised in context. If you already use Maths With Attitude, a second look will be a useful refresher. If you don't know MWA, here is your opportunity to discover a genuine alternative to text-based learning.

Not repeated

B21 Visual Representations of Learning Intentions Drawn from the Australian Curriculum Elaborations in Mathematics
Lecture
Donna Ludvigsen - Grampians Region DEECD, VIC
Annika Dalgleish - Black Hill Primary School, VIC

By using visual representations of learning intentions teachers are able to plan the explicit teaching of concepts as well as connecting practice activities and application tasks to this teaching. This workshop presents the action learning journey of a Professional Learning Team as they develop visual learning intentions drawn from the elaborations in the Mathematics learning area of the Australian Curriculum.

Repeated as A22

B22 The BIG F - All About Fractions - Consolidation of the Number System and an Introduction Into the World Of Algebra
Workshop
Ian Bull - St Kevin’s College, VIC

What is it about fractions that strikes fear into the experience of most of our students? Why are fractions so hard to teach and what is it about fractions that makes them such a challenge for students to understand? Fractions are everywhere around us and often they are more convenient to use than decimals - rather than eating a third of a pizza, eating 0.33333..... of a pizza is a clumsy way of expressing that quantity. Fractions are just numbers but according to research how can they be best be presented in the classroom - come and play with some activities to find out.

Note: Participants need to bring some coloured pencils and a pair of scissors.

Repeated as A23

B23 Sundials and Other Solar Instruments
Workshop
Tim Byrne - Casual Relief Teacher, VIC

Participants are introduced to the world’s oldest scientific instrument and make two simple sundials. Participants are given notes with various sundial equations. Participants learn to construct sundials from first principles. Participants are shown how to construct a simple equatorial sundial from inexpensive materials. Participants construct simple shadow casting instruments for measuring the sun’s altitude, zenith and azimuth. By way of providing a more meaningful context to time telling, participants learn how to calculate the correct time for noon, the equation of time, as well as make adjustments for latitude and longitude.

Not repeated

B24 Problem Solving
Workshop
Daniel Avano - Museum Victoria - Scienceworks, VIC
Bronwyn Quint - Museum Victoria - Scienceworks, VIC

In this session participants will work through a series of hands-on problems (real-life situations) to test out their problem solving skills. This will be followed by a discussion about practical ways of going about solving problems. Participants will then prepare their own individual problem solving checklist. It’s a great way to introduce
problem solving in primary or lower secondary school. This session is based on a program available to schools at Scienceworks. Participants will also be given a quick overview of other maths resources available from Museum Victoria.

Repeated as A25

B25 Knowledge Plus Action Equals a Positive Outcome
Workshop
Marilyn Snider - Global Education Project Victoria, VIC
Megan Bourke - Global Education Project Victoria, VIC

Could your young mathematicians play a role in ensuring global food security? Could they use their mathematical minds to bring energy to all corners of the earth? All the authentic data they need is at their fingertips. Learn how to access and integrate a range of mathematical information which will engage your students in a deeper understanding of the important issues in our world today.

Not repeated

B26 Using Self-Assessment Tools to Inform Your Teaching in Middle Years Classrooms
Workshops
Meredith Clegg - Hume Central Secondary College, VIC
Justine Johnston - Hume Central Secondary College, VIC

Formative and summative assessments can be more than pre and post testing. It is possible to gather informative data through the use of student self-assessment tools. This workshop will explore how to develop and use tools such as capacity matrices, vocabulary lists, progress passes and little books to gauge student understanding and make the learning explicit to students. Middle year’s students will readily engage when given the opportunity to express themselves and these tools will enhance that, and provide valuable assessment information for the teacher. Participants will be given an assortment of tools to utilise in their own classrooms.

Repeated as A26

B27 The Mathematics of Planet Earth
Lecture
Janine McIntosh - Australian Mathematical Sciences Institute (AMSI), VIC
Lachlan McIntosh - Undergraduate Student, University of Melbourne, VIC

In 2013 we celebrate the International Year of Mathematics of Planet Earth. The four themes include: A Planet to Discover, A Planet Supporting Life, A Planet Organized by Humans and A Planet at Risk. In this session we will explore the mathematics involved in topics ranging from meteorology and climate to solar systems, from ecology to transport networks and from telecommunication to epidemiology.

Repeated as A27

B28 Connecting Mathematical Concepts Through Collaborative Problem Solving
Workshop
Caroline Mazurkiewicz - Western Metropolitan Region, VIC
Kathryn Palmer - Melton Network, VIC

Research has shown that student learning is improved when connections are made with prior learning. Providing the opportunity to collaborate and discuss mathematical concepts is also vital for student learning. This workshop will provide participants with a research based model for developing and using collaborative problem solving to connect ideas, differentiate the teaching and learning and engage students with a focus on students in Years 5 to 10. Links will be made with Australian Curriculum and participants will receive a range of resources to trial in their classes.

Note: Please bring a USB stick to collect resources.

Repeated as A29

B29 Spreadsheets - The Ultimate Maths Tool
Computer Workshop
Glenn Sullivan - Wonthaggi Secondary College, VIC

This session will explore the option of using spreadsheets in the classroom. Sample spreadsheets that help student learning will be introduced. Several spreadsheets will be developed as a student would develop them in a classroom. Participants will use functions, formatting, charts and lookup tables. Suitable for new and intermediate spreadsheet users - upper primary school to senior secondary

Note: Bring a USB to download your work.

Repeated as H20
Supporting Struggling Students: Place Value and Fractions, Years 7-8

Workshop

Anita Chin - Anita Chin Mathematics Consultancy, NSW

The development of place value understanding begins in the early years with part-part-whole ideas and progresses to partitioning numbers in standard and non-standard forms. However, many students lack the ability to represent numbers in more than one way. The fraction concept is difficult to teach as it is composed of multiple ideas and can be represented in various notations. So, how can we help students build connections between concepts and plug gaps in their learning? This hands-on workshop will examine the ‘big ideas’ in ways that are accessible and engaging for all students using a concrete-pictorial-abstract approach. Black line masters provided.

Repeated as A32

Tall Trees: An Accelerated Indigenous Program

Workshop

Jan Cavanagh - Queensland University of Technology, QLD

The Accelerated Indigenous Mathematics (AIM) is designed to boost the mathematical skills of students entering secondary school without the basics which would prepare them for opportunities of trade or tertiary studies. This program is being implemented in nine North Queensland schools - supported by the staff of the YuMi Deadly Centre at Queensland University of Technology. This is a hands-on workshop, be prepared to get involved!

Not repeated

Mathematica Links to AusVELS 7-10A

Lecture

Brian Hodgson - Education Consultant, VIC
Craig Bauling - Wolfram Research Inc, USA

Mathematica is available free of charge to most students in Victorian Government secondary schools. This session illustrates how Mathematica can be used in 7-10 classes by providing direct links between AusVELS outcome statements and Mathematica resources. Participants will be shown how to create dynamic demonstration for the development of concepts and associated student exploration; modelling and problem solving with real data; production of interactive student work sheets; test construction; word processing (incorporating mathematical symbols, graphs and diagrams) and electronic/multimedia delivery of student assignments and receipt of their responses.

Repeated as C34

Mathematics Competition Questions as Problem Solving Experience

Workshop

Dr Tin Lam Toh - National Institute of Education, Singapore

Besides developing the mathematically talented, mathematics competition questions are useful resources in the mathematics classrooms for the general student population. In this session the participants will be introduced to how some mathematics competition questions could provide students with rich meaningful learning experience on mathematical problem solving. Examples for discussion will be taken from the Australian Mathematics Competition and the Singapore Mathematical Olympiad.

Not repeated

Inquiry-Based Learning in Mathematics

Workshop

Jennifer Nolan - Oxford University Press, VIC

Commercial Presentation

The Australian Curriculum “encourages teachers to help students become self-motivated, confident learners through inquiry and active participation in challenging and engaging experiences”. How can we effectively aim to achieve this goal? In this practical workshop we will explore different tasks that can be used with students so they discover new mathematical concepts for themselves. These inquiry-based tasks allow students to build on their existing knowledge and understanding. They provide structured learning so students think about their understanding, and develop the ability to connect and transfer new skills and knowledge.

Repeated as C40

Pearson Assess

Lecture

Evan Curnow - Pearson, VIC
Dirk Strasser - Pearson, VIC

Commercial Presentation

Pearson Assess takes online maths assessment to the next level. Teachers have the ability to easily create and assign differentiated tests and homework revision, with all questions automatically marked. Students can also use Pearson Assess as a tool for revision. See how Pearson Assess works with an interactive demonstration of this product.

Repeated as F33

37 2012 MAV Annual Conference
B36 Classroom Assessment in Mathematics: Learning from Students’ Responses for Better Test-Item Design

Lecture
Dr Khiok Seng Quek - National Institute of Education, Singapore

Classroom assessment is essential to teaching well. Be it assessment of, for, or as learning, a test item is one way of obtaining information about student learning, and dependable information is crucial to a proper assessment. How might a classroom teacher craft a better test item, fit for its purpose? This session presents for discussion an item design approach informed by students’ responses to mathematics test items. The approach is developed by examining the students’ responses from an eclectic mix of perspectives (e.g., mathematical, social, cultural, psychological).

Not repeated

B37 The Pedagogical Advantages of the Wireless Networked Classroom

Workshop
Dr Ray Williams - St Mark’s Anglican Community School, WA

This workshop provides participants with an opportunity to actively experience all aspects of the interactive capacity of the wireless connection of TI-Nspire devices (both calculator and netbook) to the teacher’s computer in the classroom. The ability to place a student in the role of ‘teacher’ provides a most useful degree of freedom for the teacher and results in immense pedagogical gains in the classroom.

Note: Laptops not essential, but participants encouraged to bring them.

Repeated as A39

B38 The Paperless Mathsroom - Finally

Lecture
Ro Bairstow - King’s College, New Zealand

Well almost... A class using iPads with access to a range of interactive digital resources. These include iBooks, Apps, Google Docs, Blogs, Wikis, websites... and not a piece of paper in sight. All for less than the cost of a traditional textbook. My class will still have to sit a traditional examination using pen and paper but this will be at another venue. I will demonstrate how a typical lesson works and how the resources used were created and sourced. I am a full time mathematics teacher and created two of the key resources. They are available for under $10 each. Access to the website, Blog, Wiki is free. Most of the other Apps used were either free or under $10 each from the App store.

Repeated as C42

B39 Taking a Chance - Personalised Maths in Action

Workshop
Shane O’Connor - Consumer Affairs Victoria, VIC
Roslyn Mullins - Consumer Affairs Victoria, VIC

Everyday numeracy issues exist within the myriad of gambling products available today, from lotto numbers and dividends through to the statistics of winning at roulette. Consumer Affairs Victoria’s Responsible Gambling resource is a comprehensive educational tool for teachers - with activities, video clips and reflective exercises - that promote personalised maths learning in this important social context. This workshop will provide teachers with an opportunity to explore the maths within chance, probability and data and how students can apply maths skills on a personal level. All attendees will receive a free copy of the Responsible Gambling resource.

Repeated as H31

B40 Deepen Your Students Understanding of Data: Using TINKERPlots Dynamic Data Exploration Software

Workshop
John Lawton - Objective Learning Materials, VIC
Dr Ian Lowe - The Mathematical Association of Victoria, VIC

Statistics is important to the Australian Curriculum. This workshop explores how the constructivist program TINKERPlots can be used across the curriculum. Using the data sets recently created by UTAS to exploit TINKERPlots, schools can give their students “the ability to create their own plots and tell their own story”. This is because the open ended structure of the program avoids “requiring students to decide beforehand on a graphical form created by the software”. Recent classroom experience of schools that have adopted TINKERPlots will be discussed along with the enormous potential that it has for developing deeper understanding by using data.

Repeated as G37
Using CAS as a Teaching Tool for Linear Functions to Linear Programming

Workshop

Jenny Curtis - St Mark's Anglican Community School, WA

This session highlights the enhancements to the graphing capabilities of the latest TI-Nspire OS (V3.2). The session will highlight the versatility this gives to exploring all types of linear graphs in middle school leading to more exciting ways to teach linear programming in senior school.

Note: TI-Nspire calculators will be used in this session and loan calculators will be available.

Repeated as A42

Empowering Teachers in New Ways

Lecture

Alexander Young - Ingenious Technological Enterprises, TAS

Commercial Presentation

This paper will introduce you to the concept of digital rubrics, a methodology that enables the teaching and assessment of deep learning. Readers will see how teachers can:

1. Improve their ‘assessment for learning’ through the innovative use of their school photocopyer as a high speed scanner obtaining exceptionally powerful insights into their assessment of written responses and multiple choice assessment.
2. Measure ‘the effect size’ of their teaching.
3. Reduce their workload and at least double their students’ rate of learning.
4. Identify gaps in student learning not observable under conventional assessment.
5. Quantify question quality.

Repeated as G41

Using GeoGebra to Stimulate

Workshop

Dianne Frost - Pascoe Vale Girls College, VIC
Adrian Berenger - Northern Region, VIC

The notebook program for students in Years 9 and 10 provides opportunities for teaching and learning activities in Geometry and Measurement to become more interactive and engaging to all learners. Students are able to investigate mathematical properties and analyse complex geometrical problems through GeoGebra. This workshop provides opportunities for teachers to become familiar with some of the tools contained within the GeoGebra program and to create engaging activities to experiment with in classrooms. GeoGebra is freely available to teachers through Edustar.

Note: Please bring your own laptops ensuring Edustar with GeoGebra is installed - fully charged and wireless internet access.

Repeated as C48

How Can We Use an iPad in Mathematics Class

Lecture

Dennis Fitzgerald - Siena College/Deakin University, VIC

How can we use iPads and similar technology in our classrooms? What apps exist for us and which of the free ones are worthwhile. This will be a discussion of my use of iPads in a Year 9 and 11 class for the first time and some suggestions on how to use them and some of the pitfalls of their introduction. Please bring your iPad if you have one and any success stories!

Note: Bring your iPad if you have one.

Not repeated

Engaging Foundation Mathematics Students - Some Suggestions

Workshop

Leah Whiffin - Bendigo Senior Secondary College, VIC
Sue Scott - Bendigo Senior Secondary College, VIC

Running out of ideas for VCAL and VCE Foundation Mathematics. This workshop will provide units of work such as budgeting and kite making that can be easily modified or used in the classroom.

Note: Please bring a USB stick if you would like to receive copies of resources. Similar to a presentation given a couple of years ago.

Repeated as A46
B46  A Smorgasbord of Univariate Data Analysis on the TI-Nspire
Workshop
Russell Brown - Educational Consultant, VIC
Rodney Anderson - Moreton Bay College, QLD

In this hands-on session both raw data and frequency tabulated data will be analysed. Some hints will be given to maximise the TI-Nspire’s functionality. It will cover box-plots (including parallel box-plots), histograms with techniques of aligning columns depending whether discrete or continuous data is used, pie charts, bar charts (including splitting of categories), relative frequency plots and cumulative frequency plots.

**Note:** Bring your own TI-Nspire or borrow one at the session.

*Repeated as E44*

B47  Intro to Mathematica
Computer Workshop
Craig Blake - Mount Erin College, VIC

This session will introduce participants to using Mathematica as a teaching, learning and computational tool when teaching Further Mathematics and Mathematical Methods. It is assumed that participants will be beginners to using Mathematica.

*Repeated as F40*

B48  VCE and the Virtual Learning Network
Computer Workshop
Stuart Payne - Bendigo Senior Secondary College, VIC
Tony Carroll - Bendigo Senior Secondary College, VIC

Students of VCE Specialist Maths and Maths Methods CAS Units 1 to 4 have successfully completed these courses entirely online in 2012, through the Virtual Learning Network established at Bendigo Senior Secondary College. The details of this exciting project, including the structure and organisation, the methods used to develop materials and the results of formal evaluations of the project will be discussed during the workshop. Participants will have the opportunity to explore the learning materials available to students through the Virtual Learning Network site.

*Repeated as A48*

B49  An Amazing Theorem
Lecture
John Kermond - John Monash Science School, VIC

Marden’s theorem is an amazing theorem that links the roots of a complex cubic polynomial and the roots of its derivatives with several geometrical properties of triangles and ellipses. In this session the theorem is presented and discussed in detail using several examples. The examples provide interesting material that could be used for the VCE Specialist Mathematics Unit 3 Analysis Task.

*Repeated as F46*

B50  10 Things Your VCE Students Need to Know About the Casio ClassPad
Workshop
June Warren - Penleigh and Essendon Grammar, VIC
Cathy Devlyn - Penleigh and Essendon Grammar, VIC
Maria Schaffner - Penleigh and Essendon Grammar, VIC

This is a beginners/novice session for teachers new to VCE Maths. The presenters are experienced and accomplished Year 12 Further and Maths Methods teachers and will present tips and suggestions on how your students can best use the functions and extended capabilities of the Casio ClassPad. An insight into maximising your students’ exam marks will be provided along with worksheets highlighting recent VCAA exam style questions and suggested solution processes.

**Note:** Please bring your Casio ClassPad calculator- limited units will be available for loan.

*Not repeated*

B51  What’s New in the Australian Curriculum for Victorian Mathematical Methods and Specialist Mathematics Teachers
Lecture
Allason McNamara - Mount Scopus Memorial College, VIC
Dr Philip Swedosh - St Leonard’s College, VIC
Dean Lamson - Ballarat Clarendon Grammar, VIC

Philip, Allason and Dean are members of the Specialist Mathematics and/or Mathematical Methods CAS Setting and Marking Panels. They will discuss the new content in the Australian Curriculum and different approaches which could be used to assess this content.

*Repeated as A51*
CK1 My Maths? An Oxymoron or Wake-Up Call in an Era of National Curriculum and NAPLAN

Keynote
Prof Dianne Siemon - RMIT University, VIC

Large-scale research data and the widespread use of the assessment options from the Scaffolding Numeracy in the Middle Years (SNMY) project indicate that many children in Years 4 to 9 are being left behind in relation to the key mathematical ideas and strategies needed to successfully participate in further school mathematics. This is recognised in the emphasis on differentiation inherent in the e5 instructional model and the development of e-book boxes by the Victorian Department of Education and Early Childhood Development (DEECD). While these approaches and targeted teaching informed by research-based advice (e.g., the SNMY Learning Assessment Framework for Multiplicative Thinking) have a critical role to play in personalised mathematics teaching and learning, understanding and responding to the emotional needs of students is also important. This presentation will revisit the notion of streaming or ability-based grouping in the middle years and consider what ‘my maths’ might mean for the teaching and learning of mathematics in the middle years.

Di Siemon is a Professor of Mathematics Education in the School of Education at RMIT University. Her research interests include the development of children’s number ideas, mathematical problem solving, the use of formative assessment to inform teaching, and the provision of mathematics education in remote communities. Di has developed a number of public access assessment tools that are widely used throughout Victoria, South Australia and Tasmania and enjoys providing professional learning sessions on the big ideas in number. Di is a Past President of the Australian Association of Mathematics Teachers and the Mathematical Association of Victoria.

C2 Starters and Independent Activities for the First Years at School
Workshop
Viv Thompson - Otago University College of Education, New Zealand

This workshop will provide a selection of practical ideas to start a mathematics lesson with young children. It will also include a number of relevant independent activities which relate directly to the starting activity allowing opportunities for children to practise in pairs and small groups.

Repeated as D2

C3 Picture Books and Mathematics
Workshop
Dorothy Butterfield - University of Otago, New Zealand

This workshop will use picture books and other materials to develop understandings of number, space or measurement.

Repeated as D3

C4 What I Have to Teach Algebra!
Workshop
Sharyn Livy - The Mathematical Association of Victoria, VIC
Tracey Muir - University of Tasmania, TAS

Number and algebra can be developed together, as each enriches the study of the other. During this workshop a range of tasks will be presented that will assist your students to recognise patterns, conduct investigations, solve problems and communicate their reasonings for algebra.

Repeated as D5

C5 Early Years Concept Map
Workshop
Rob Proffitt-White - Principal Education Advisor-ACARA, QLD

This session uses a concept map and activities that take teachers through some of the key understandings of the number strand of the Australian Curriculum. It offers open ended ideas that can be immediately taken back to the classroom, allowing students multiple entry points and aiding teachers in differentiation.

Not repeated
C6  How We Introduced Personal Learning at Tallis Street
Workshop  Years: F to 6
  Pat Conheady - NBC - Tallis Street, VIC
  Michelle Gawronski - NBC - Tallis Street, VIC

As primary maths specialists we have had the opportunity to look at data then introduce change to improve student outcomes. Beginning with changes in planning and the way we look at our personal learning.

Repeated as D6

C7  Student Reflection
Workshop  Years: F to 6
  Sheila McCarthy - Northern Bay College, VIC
  Sandi Warrick - Northern Bay College, VIC

This session aims to increase knowledge of the importance and purpose of student reflection and to provide ideas for teachers to develop those skills with their students. Teachers need to:

◊ Be aware of the importance and purpose of student reflection.
◊ Understand how questioning encourages student reflection.
◊ Be aware of the importance of timing.

It also aims to provide teachers with ideas that will help to develop the skill of student reflection so that they have:

◊ Improved understanding of learning.
◊ Increased confidence.
◊ Increased knowledge of learning behaviours that encourage success.
◊ Increased ability to work as supportive team members.
◊ Increased ability to set goals and reflect on their achievement.

Repeated as D7

C8  Models and Representations to Support Problem Solving
Workshop  Years: F to 6
  Prof Mike Askew - Monash University, VIC
  Lisa Canty - Our Holy Redeemer School, VIC
  Lucy Gorman - Our Holy Redeemer School, VIC

Problem solving and reasoning are core proficiencies in the Australian Mathematics Curriculum. In this session we will explore a collaborative project between university researchers and the staff of a primary school designed to promote these proficiencies through learners reasoning about the structure of the mathematics underlying word problems. A two-fold approach was taken:

1. Helping learners articulate categories of problems, and
2. Using diagrammatic models of problems as bridges into setting up equations.

The session will explore the thinking and research behind these approaches, report on teachers’ and learners’ responses to the problem solving lessons and explore implications for practice.

Not repeated

C9  Primary Maths Specialists at Upwey South Primary School
Lecture  Years: F to 6
  Julie Hall - Upwey South Primary School, VIC
  Lee Reich - Upwey South Primary School, VIC

Primary Maths Specialist is a Federal Government Program. Hear about the program and how we used this opportunity to improve our numeracy results at Upwey South Primary School. We began with our documents and worked with teachers to introduce differentiation in classes. We have made great progress and would like to share with you our journey, including where to next.

Repeated as G7

C10  Let’s Be Reasonable
Lecture  Years: F to 8
  Assoc Prof Colleen Vale - Deakin University, VIC
  Dr Leicha Bragg - Deakin University, VIC
  Dr Sandra Herbert - Deakin University, VIC
  Dr Esther Loong - Deakin University, VIC
  Dr Judy Mousley - Deakin University, VIC
  Dr Gaye Williams - Deakin University, VIC

The Mathematical Reasoning Research Group (MaRRG) at Deakin University was established to generate knowledge about Reasoning for and in the learning and teaching of mathematics in pre-school, primary and junior secondary classrooms. In this session, we will share our findings from research based on resources from the AAMT In Teacher’s Hands Project and the ways local and international primary classroom teachers are injecting reasoning into the mathematics lessons. Engaging investigations that assist students to construct generalisations and justify...
their decisions will be presented

Not repeated

C11  Transform Your Classroom with Online Curriculum, Assessment and Reporting - Cambridge HOTmaths
Workshop
Sharon London - Cambridge HOTmaths, NSW
Victoria Cook - Cambridge University Press, VIC

Commercial Presentation
Explore an exciting range of curriculum content, activities, games, investigations, assessment material and reporting for Australian Curriculum F-10A. Cambridge HOTmaths can also be used with a range of mathematics textbooks, providing exceptional integrated text and online programs. Find out about the powerful Test Generator, the Search/Research tools, and the Class and Homework Task Management system, supporting students of all ability levels and learning styles. Find out how Cambridge HOTmaths is being used for classrooms with and without technology, for 1-to-1 programs, for homework, for study, research and personalised learning.

Repeated as B9

C12  MAV Maths Talent Quest - Working Mathematically, Investigation Projects Workshop
Workshop
June Penney - VIC
Kelly Gallivan - St Kevin's Secondary School, VIC

The Maths Talent Quest (MTQ) has been running for over 30 years and continues to be an important component of the MAV's student activities program. MTQ involves students engaging in personally chosen 'real life' maths investigations. The categories include all Primary and Secondary year levels and the investigations may performed by individuals, groups or classes. Do you want to find out more about the MTQ and how it links to the curriculum? Do you have a personal interest or do you want to find out how to run it at your school? Come join us! You will also be provided with the opportunity to ask questions, discuss ideas and read past investigations.

Repeated as D12

C13  From NFI to WTF: Not Everyone's Good at Mathematics!
Workshop
Prof Martin Westwell - Flinders University, SA
Kristin Smith - Flinders University, SA
Deb Lasscock - Flinders University, SA

From Not Following Instructions to Willing to Fail. We often hear people describe themselves as either good or bad at mathematics. How do they get like this? What difference does it make to their outcomes? Based on the research findings of Carol Dweck at Stanford this workshop highlights how our classroom practice shapes students' views of themselves as learners in mathematics. Even our attempts to build self-esteem can go horribly awry and the workshop will help to navigate this tricky ground. This is a stand-alone workshop with links to other workshops within the conference.

Not repeated

C14  Mathletics 'Integrating the Resources'
Computer Workshop
Lauren Anderson - 3P Learning, NSW
Andrew Nicholls - 3P Learning, NSW

Commercial Presentation
This course is designed to illustrate different methods for incorporating Mathletics into your learning unit and daily lesson plans. Utilising the different resources available within the program such as Teacher Toolkit and Concept Search, teachers are shown how to introduce new concepts in a collaborative forum for discussion and review. Teachers are taught how to develop lesson plans for units of work using a carousel approach, carefully integrating Mathletics in rotation between online, practical and paper-based activities. The course also briefly revisits the Results area of the program, illustrating how to focus students around new concepts for class work or homework revision.

Repeated as G14

C15  GradeXpert Student Assessment Tracking Software
Lecture
Anthony Sacker - GradeXpert, VIC

Commercial Presentation
GradeXpert is a student assessment tracking software tool used by schools to centrally store, track and analyse student assessment results and outcomes-based progress, including NAPLAN, PAT and any other external or internal assessments. It is a central repository for student assessment results, digital attachments, individual
learning plans, teacher comments and semester reports, enabling a school to easily create a complete, historical electronic portfolio for each student. Teachers can graphically analyse and compare student, class and year level progress from term to term and year to year and print a variety of comparative reports and graphs to ensure students who are falling behind or racing ahead can be quickly identified. Better than the Ultranet, faster than Excel and easier than 1-2-3!

Repeated as E14

C16 Fractions - The Pieces Get Skinnier and Skinnier!
Workshop
Anne Milburn - Cognition Education Ltd, Auckland, New Zealand
Alison Howard - Cognition Education Ltd, Auckland, New Zealand
◊ Do your students find fractions confusing?
◊ Is their understanding of fractions quite fragile?
◊ Are you unsure how to help them?

If so, this practical and hands-on workshop is for you! We will explore children’s fractional misconceptions through a range of activities and games. The focus of this workshop will be on supporting students aged from 5 to 8 years.

Repeated as B12

C17 Open and Closed Questions for Differentiated Learning
Workshop
Greg Butler - CampHill Primary School, VIC
Fiona Lindsay - CampHill Primary School, VIC
Leanne Cummings - CampHill Primary School, VIC

A hands-on session using both open and closed questions and different types of scaffolding techniques to use the same question to meet the mathematical abilities of your whole class. A variety of problem solving experiences will be provided with opportunities to formulate your own questions and scaffolding strategies with a little bit of assessment and fun thrown in.

Repeated as D14

C18 Making Maths Marvellous with Manchester and Manipulatives
Workshop
Gabrielle West - Department of Education and Training, NT

This workshop looks at engaging ways to teach the Australian Curriculum: Mathematics strands - Number and Algebra, Geometry and Measurement, Statistics and Probability. Teachers will see what the 4 mathematics proficiencies actually look like in the classroom through a series of hands-on activities that will engage the learner, ask the ‘right’ questions and help students to use problem solving strategies and think about their learning. Participants will use tablecloths, tea towels, angle wheels, elastics, coloured paper, paddle pop sticks, 100 grids, money and fraction walls, dice, dominoes, decks of cards and other manipulatives to create motivating, real activities and investigations as part of this enjoyable session.

Note: Please bring a camera to take photos of the activities.

Repeated as H12

C19 From Number Sense to Fluency Using Playing Cards: No Joke(r)
Workshop
Dr Paul Swan - Edith Cowan University, WA
Derek Hurrell - University of Notre Dame Australia, WA

While participants in this session will play a number of card games, all linked to the Australian Curriculum, the focus will be on the development of number sense and mental strategies with the aim of improving computational fluency. Suggestions will be made for simplifying the games and making them more challenging.

Not repeated

C20 Developing Logical Thinking
Workshop
Rose Golds - AUT University, New Zealand
Jo Knox - Cognition Education, New Zealand

How much logical reasoning do you build into your mathematics programme? Attribute blocks (or logic blocks) were ‘all the rage’ in the 1980’s. The New Zealand assessment tool, Junior Assessment of Mathematics (JAM), is using attribute blocks to help assess students in regards to algebraic thinking. However, there is much more that can be done with these blocks. This workshop looks at some very practical applications of attribute blocks to allow you to develop the logical mathematical thinking skills of your students between the ages of 5 and 12.

Not repeated
A mathematician’s work begins with an interesting problem. Therefore in a curriculum built around learning to work like a mathematician, students will often be invited to begin their work in this way. Hands-on problem solving tasks from Mathematics Task Centre are the world’s largest source of such interesting starting points and offer much more than the tip of the puzzle described on the card. In this workshop you will explore a sample of these tasks and find out about their depth, their multiple lives, stories of success from experienced colleagues and the web support provided by Mathematics Centre.

Not repeated

C22 Algebraic Thinking
Workshop

Richard Korbosky - Maths Association of WA, WA

This session explores early patterning ideas to generalisations to develop logical thinking, algebraic thinking and how to solve problems using manipulative mathematical materials. Materials such as pattern blocks, three bear family, matchsticks, connecting people, two cm wooden coloured blocks and number balance will support the development of pre-algebra thinking to formal algebra. Focus is on the manipulation of mathematics materials, patterning, number sentences collecting data, using tables, interpreting results, stating generalisations as a rule and using pro-numerals to describe repeating and growing patterns. These skills are needed to develop their understanding of algebra. They assist in problem solving situations and develop student’s ability to improve their reasoning about mathematical situations.

Not repeated

C23 Focusing on the Language of Mathematics to Enhance Understanding, Years 3-8
Workshop

Anita Chin - Anita Chin Mathematics Consultancy, NSW

Mastering the language of mathematics and understanding the content can be challenging for many students and not just ESL learners. The components of the Proficiency strands of the ACM provide the language to build in the developmental aspects of the learning of mathematics. This hands-on workshop will provide practical ideas for embedding rich mathematical language into the mixed ability classroom for number and geometry concepts. Strategies for scaffolding will be modelled to make tasks accessible, rigorous and engaging for all students. Assessment ideas will include the use of open-ended questions. References to NAPLAN questions and blackline masters provided.

Repeated as D17

C24 iPads and Apps in the Mathematics Classroom
Workshop

Brett Stephenson - Guilford Young College, TAS

Apps for the iPad and tablets in general are growing at an phenomenal (perhaps exponential) rate. In this session I will demonstrate some of the apps that I have found useful in a mathematics classroom. Some of the apps could be utilised in any classroom, some are designed for upper secondary and beyond and some are just entertaining. There are some I would find it hard to be without!

Note: If you have one, please bring your iPad or tablet to this session.

Not repeated

C25 Mathematics Investigations in Primary Mathematics
Workshop

Dr Phong Lee Koay - National Institute of Education, Singapore
Dr Lu Pien Cheng - National Institute of Education, Singapore

Mathematical problem solving is at the centre of the framework of the mathematics curriculum in Singapore, and mathematical problems include non-routine, open-ended investigations and real-world problems. There are primary school mathematics teachers who are unfamiliar with the investigative processes in mathematics, and have seldom attempted to integrate mathematics investigation into their teaching. In this session we will share some investigation tasks and ideas on the integration of investigations in primary mathematics classrooms.

Repeated as F20

C26 Time for YuMi Deadly Maths
Workshop

Jan Cavanagh - Queensland University of Technology, QLD

Time for a change in the way we teach Time! The YuMi Deadly Maths programs have a variety of body, hand and mind activities to help teachers to present to students from disadvantaged backgrounds the basics of mathematics in a practical way. Be prepared to learn about “time well spent” in a hands-on practical workshop. Jan Cavanagh works with teachers on several projects from QUT - YuMi Deadly Centre.

Not repeated
C27  Bridging the Gap
Workshop  Years: 4 to 8
  Tanya Smith - Pearson, VIC
  Sophie Matta - Pearson, VIC

Commercial Presentation
In this workshop participants will be involved in breaking ‘tricky’ mathematical concepts into three levels of ability and adapting hands-on activities aimed at scaffolding weaker or less confident students to a higher level of understanding. This session will show how questions and investigations can be adapted to engage more students and encourage individuals to develop their own set of learning strategies. Teaching strategies outlined in the workshop will also show ways that we, as educators, can support the transition from primary to secondary mathematics in a mixed ability classroom. Participants will leave with ready-to-go maths activities, and new ideas for teaching mathematics.

Repeated as G21

C28  A Problem to Tease You
Workshop  Years: 4 to 10
  Prof Derek Holton - University of Melbourne, VIC

I will take one problem and show how it might be used in a classroom. The problem should be accessible in various ways to students at different levels. It will involve extensions and generalisations and I hope to give some idea of the way a mathematician works when looking at a problem. As it turns out that is not too different from the way students are able to look at problems. This session is a repeat of another session but with a different problem.

Note: Pens, paper and brains are necessary.

Repeated as H16

C29  Delivering Differentiation - Including Every Child
Lecture  Years: 5 to 9
  Yvonne Reilly - Sunshine College, VIC
  Jodie Parsons - Staughton College, VIC

This workshop will expose participants to an effective model of practice in which teachers plan and prepare the delivery of fully differentiated and inclusive maths lessons suitable for a middle years’ classroom. The philosophy for this model is the empowerment of all learners to choose a task which is ‘just right’ for them.

Note: Please bring a USB for resources.

Repeated as A28

C30  Teaching Families to Learn Maths at Home
Lecture  Years: 5 to 9
  Nathaniel Bradshaw - Caroline Chisholm Catholic College, VIC
  Justin Matthys - Caroline Chisholm Catholic College, VIC

In this session three Family School Partnerships activities will be presented. These are college-run and involve family participation and peer-to-peer mentoring. The “Learning at Home” program provides an environment where families participate in numeracy exercises with a view to better being able to support learning at home. At the “Gaming Choices” evening, students present to an audience of their peers and parents about different types of video games, their potential benefits and potential risks. “Maths Club” is a weekly program where senior mathematics students tutor junior students who are in need of numeracy support. The session will equip attendees with a model for running similar programs successfully within a school, as well as relevant web-based resources.

Note: These sessions are relevant to staff members involved in Wellbeing.

Repeated as D21

C31  CAS in Years 7 and 8: What! Why and How
Lecture  Years: 7 to 8
  Sue Garner - Ballarat Grammar/Cengage Learning, VIC

Commercial Presentation
This session will consider how Computer Algebra Systems (CAS) could be used by teachers in Years 7 and 8 Mathematics Classrooms. Even for teachers who are wary of this type of calculator’s use for students this young, there are ways that this tool can enhance learning by showing patterns in number, graphs and elementary algebra. Teachers will be guided through some of the activities in the Teacher Editions from Nelson Think Maths for Year 7 and 8.

Note: Bring your CAS calculator.

Repeated as G27
C32  Quiz-it Maths! A Trivia Show Mixing Pop Culture With Maths
Lecture
Years: 7 to 8
Peté Curry - Quiz It, VIC
David Warneke - Quiz It, VIC
Commercial Presentation
Quiz-it maths combines year level appropriate subject matter with pop culture to produce an entertaining and educational trivia competition. Designed for Years 7 and 8 the quiz is an excellent way to gauge student’s knowledge before an idea is explored, or to revise content. Quiz-it maths includes DVD games, such as The Triangulator, Maths Genie, PrimeTime, Panda’s Problem and many more. This demonstration will re-create the incursion where professionally trained, energetic Quiz Meisters will come to your school to present the quiz in a location of your choice. Questions are presented along with current pop music to create an exciting and competitive environment that will make you feel like a TV show has arrived at your campus. This is the most fun you will have at the MAV conference. As one participant commented last year..."This was the best session ever!" And another..."I can’t believe I won a double movie pass, it was much better than the protractor I won in the geometry session before lunch!"
Repeated as H22

C33  Achieving Better Results by Tailoring Mathematics to Individual Students’ Needs With Assess
Lecture
Years: 7 to 9
Sam Hopley - Oxford University Press, VIC
Commercial Presentation
The average mathematics classroom is home to a diverse range of student needs and abilities. The accessibility and flexibility of Assess allows teachers to scaffold and support while providing great opportunities for inquiry-based and student-lead learning. Students are more engaged and will achieve much better results when challenged at the appropriate level. This session will demonstrate a variety of uses of Assess in the classroom as a teaching and learning tool as well as a means to gauge the progress of individuals and the class as a whole.
Repeated as E31

C34  Mathematica Links to AusVELS 7-10A
Lecture
Years: 7 to 10
Brian Hodgson - Education consultant, VIC
Craig Bauling - Wolfram Research Inc, USA
Mathematica is available free of charge to most students in Victorian Government secondary schools. This session illustrates how Mathematica can be used in 7-10 classes by providing direct links between AusVELS outcome statements and Mathematica resources. Participants will be shown how to create dynamic demonstration for the development of concepts and associated student exploration; modelling and problem solving with real data; production of interactive student work sheets; test construction; word processing (incorporating mathematical symbols, graphs and diagrams) and electronic/multimedia delivery of student assignments and receipt of their responses.
Repeated as B32

C35  Constructing Animated Proofs Using a Dynamic Geometry Software
Computer Workshop
Years: 7 to 10
Dr Ng Wee Leng - National Institute of Education, Nanyang Technological University, Singapore
Dynamic geometry software (DGS) refers to computer programs which allow one to create and then manipulate geometric constructions. Many DGS packages offer graphing utilities as well. DGS, which is suitable for implementation in a discovery-learning environment or for demonstration purposes, is particularly common in secondary school geometry classrooms. In this workshop we shall explore the use of DGS in constructing animated geometric proofs. The DGS used in this workshop is the Geometer’s Sketchpad.
Repeated as A33

C36  Using Mathematica in the Classroom - By Teachers for Teachers
Lecture
Years: 7 to 10
Karen Reid - Broadford Secondary College, VIC
Carmen Popescu-Rose - Loreto Mandeville Hall, VIC
Mathematica is computational software which we, as teachers, have discovered to be a very powerful teaching and learning tool. It helps demonstrate concepts, create supporting course materials, assessment tasks, and presentations, and engages students in interactive learning, exploring and developing an understanding of mathematical concepts. It can be used from basic computations to very complex operations. Bring your laptop and begin to explore and use some of the functionality of Mathematica for the classroom. Teachers from government schools have access to Mathematica as part of the EduStar package. Teachers who do not have a Mathematica licence can download a free trial version from Wolfram Research.
Note: Bring your own laptop, fully charged, with eduStar image or Mathematica downloaded. (Free 30 day trials usually available).
Repeated as G30
C37  ‘Realistic Mathematics Education’ for Secondary Maths
Workshop

Bruce Schmidt - Grampians Regional Office, VIC
Peter Durance - Stawell Secondary College, VIC

The Dutch approach to teaching mathematics ‘Realistic Mathematics Education’ (RME) has 6 guiding principles that can be used as a framework to guide the development and teaching of a secondary maths unit of work. RME particularly promotes ‘learning by doing’, the value of social interaction in the learning process, and the importance of guiding students to experience the development, usefulness and relevance of mathematics with curriculum goals in mind. This workshop will present an overview of RME and its principles, and how they translate into practice with some example activities and experiences.

Repeate as D28

C38  Interactive Diagrams for Understanding Maths on a Computer - Secondary
Lecture

Dr Ian Lowe - The Mathematical Association of Victoria, VIC

Commercial Presentation

Ian has become a master in the use of interactive diagrams, created in Excel, to help students develop their understanding of mathematical ideas. These are available from MAV on the CD “Interactive Learning”. Ian will demonstrate many of these in all curriculum areas, and show how they fit into the ‘Teach Maths for Understanding’ Differentiated Unit Plans.

Not repeated

C39  Five Minute Activities
Workshop

Kim Streek - CRC Sydenham, VIC
Ingrid Jahnke - Ex Mowbray College, Town Centre Campus, VIC

We will supply a number of five minute activities to use in the Middle school classroom. However, the aim is for all participants to bring one or two activities they currently use to make a ‘bank’ of them for all participants to take home to use in their own school.

Note: Please bring one or two five minute activities you currently use in your Middle school classroom to share with the other participants.

Repeate as A37

C40  Inquiry-Based Learning in Mathematics
Workshop

Jennifer Nolan - Oxford University Press, VIC

Commercial Presentation

The Australian Curriculum “encourages teachers to help students become self-motivated, confident learners through inquiry and active participation in challenging and engaging experiences”. How can we effectively aim to achieve this goal? In this practical workshop we will explore different tasks that can be used with students so they discover new mathematical concepts for themselves. These inquiry-based tasks allow students to build on their existing knowledge and understanding. They provide structured learning so students think about their understanding, and develop the ability to connect and transfer new skills and knowledge.

Repeate as B34

C41  Resourcing Financial Literacy in the Australian Curriculum
Computer Workshop

Anne Nunan - Financial Basics Foundation, VIC
Katrina Birch - Financial Basics Foundation, VIC

Traditionally, only students studying Business and SOSE have been exposed to financial literacy education. Mathematics has a significant role in supporting young people to become financially literate. Financial Literacy is also an ideal context for developing competency and confidence in numeracy. Implications for curriculum development in Mathematics, and methods of implementation will be addressed. A range of strategies for incorporating ESSI Money within the middle school curriculum will be demonstrated in a practical session. ESSI Money is an engaging digital resource which provides an opportunity for middle school students to learn how to better manage personal finances. Financial Basics Foundation is a registered charity. FBF teaching resources are provided FREE OF CHARGE to all Australian secondary schools.

Repeate as D32
C42  The Paperless Mathsroom - Finally
Lecture  Years: 7 to 12

Ro Bairstow - King’s College, New Zealand

Well almost... A class using iPads with access to a range of interactive digital resources. These include iBooks, Apps, Google Docs, Blogs, Wikis, websites... and not a piece of paper in sight. All for less than the cost of a traditional textbook. My class will still have to sit a traditional examination using pen and paper but this will be at another venue. I will demonstrate how a typical lesson works and how the resources used were created and sourced. I am a full time mathematics teacher and created two of the key resources. They are available for under $10 each. Access to the website, Blog, Wiki is free. Most of the other Apps used were either free or under $10 each from the App store.

Repeated as B38

C43  The Quantified Self - Collecting and Visualising Data About You…
Computer Workshop  Years: 7 to 12

Colin Chapman - International School Winterthur, Switzerland

The quantified self framework seeks to collect data using simple technologies about an individual’s inputs, states and performance. The framework foregrounds data processing, analysis and presentation to facilitate decision making for participants. The session will be interactive featuring platform neutral techniques for collecting data about the self. A broad range of data collection techniques will be explored using a variety of different microprocessors, smartphones and physical instruments. Cloud based cooperative tools for data processing, analysis and presentation will be featured and explored for opportunities to engage classroom participants in collaborations that reach beyond the borders of their school.

Repeated as D33

C44  Physical, Hands-On Activities for General and Further Mathematics
Workshop  Years: 7 to 12

Kara Fox - Bendigo Senior Secondary College, VIC
Duane Anderson - Bendigo Senior Secondary College, VIC

Mathematics in a secondary classroom can sometimes be a static, unimaginative environment where students are caught in a routine that bears little relevance to the world we live in. As part of our Professional Development goals we actively implemented a range of physical and hands-on activities in our General Maths and Further Maths class in order to engage a wider range of learners and also bring a point of difference to our classes. In this workshop we will be sharing some of these ideas.

Note: Please wear footwear and clothing appropriate for light physical activities.

Repeated as D34

C45  Teaching with the iPad
Lecture  Years: 7 to 12

Freda Goddard - Presbyterian Ladies College, VIC
Ian Taylor - Presbyterian Ladies College, VIC

Commercial Presentation

Doceri is the professional iPad interactive whiteboard and screencast recorder with built-in remote desktop control, from SP Controls. This session will showcase how we’ve used Doceri in the classroom and the powerful impact it has had on our lessons. Connect to Doceri Desktop to access, control and annotate over any file or program on your computer. You can create, edit, replay and perfect your hand-drawn lesson or annotated presentation before recording a screencast. ‘Doceri Remote’ is available free in the iTunes App store. Download a free trial of ‘Doceri Desktop’ at www.Doceri.com

Note: iPads are not required for this session.

Repeated as E37

C46  So This Will Be/Has Been Your First Year of Teaching Mathematics?
Lecture  Years: 7 to 12

Rob Vermay - VIC

An experienced mathematics teacher at the end of his career shares a range of ideas, strategies and resources that may be of interest to beginning teachers. This session will explore issues of interest to new mathematics teachers including variety in your teaching, motivating students, common errors, class and time management, settling into a new school, etc. Other issues may arise during discussion and will also be addressed. This is a repeat of a popular option presented in 2011.

Not repeated
C47 Discussion of Broader Issues in Teaching About the Mathematics of Gambling: Past, Present and Future
Lecture
Donald Smith - VIC
Teaching about gambling to secondary students in maths classes is fraught with difficulty: It’s not in the curriculum, and left out of text books. It’s opposed by parents: Introducing commercial gambling games grooms students. It’s been done badly in the past. Individual teachers do it in an ad-hoc way. Probability concepts are hard to understand. Government sponsored curriculum interventions get it wrong. The Productivity Commission is against it because it hasn’t worked... Let’s talk through a range of these issues together: Have you used gambling in your teaching? Do you have colleagues who have used it badly? What restrictions do you face in class planning? Have you used Government sponsored gambling teaching materials? What are maths teacher’s social responsibilities?
Not repeated

C48 Using GeoGebra to Stimulate Workshop
Dianne Frost - Pascoe Vale Girls College, VIC
Adrian Berenger - Northern Region, VIC
The notebook program for students in Years 9 and 10 provides opportunities for teaching and learning activities in Geometry and Measurement to become more interactive and engaging to all learners. Students are able to investigate mathematical properties and analyse complex geometrical problems through GeoGebra. This workshop provides opportunities for teachers to become familiar with some of the tools contained within the GeoGebra program and to create engaging activities to experiment with in classrooms. GeoGebra is freely available to teachers through Edustar. Note: Please bring your own laptops ensuring Edustar with GeoGebra is installed - fully charged and wireless internet access.
Repeated as B43

C49 Mathematica Notebooks as Pedagogical and Assessment Tool for Mathematical Methods (CAS) Computer Workshop
Trevor Raine - Maffra Secondary College, VIC
Jennifer Palisse - Mater Christi College Belgrave, VIC
Dr David Leigh-Lancaster - Victorian Curriculum Assessment Authority (VCAA), VIC
Participants will work with sample Mathematica notebooks developed as pedagogical and assessment tools for Mathematical Methods (CAS) Units 1-4 as part of a small scale VCAA computer-based exam trial. These notebooks are teacher and/or student interactive digital files that incorporate text, graphics and computations, and can be readily shared and modified. Benefits and challenges from implementation experience in 2012 will also be discussed briefly. No previous experience with Mathematica is required, however participants should be familiar with working in a Windows environment.
Repeated as D44

C50 How Helpful Was the CAS Calculator in this Year’s 2nd Methods Exam? Workshop
Kevin McMenamin - The Peninsula School, VIC
Savvy use of the CAS calculator in past Methods 2 examination questions has shown it to be advantageous and worth the time and effort of getting to know its workings. Generally at least half of the multiple choice questions and many parts of the extended answer questions benefit from good calculator skills. This hands-on session will get you using the calculator to see just how helpful (or not) it was with this year’s questions. The most efficient methods will be presented and questions where the calculator should be avoided will be pointed out. Although the Casio ClassPad will be the featured CAS, the content is readily transferrable for TI-Nspire users. Note: Bring along your own calculator. Some ClassPads will be available for loan.
Repeated as G42

C51 Hands-On ClassPad Tips and Tricks for Upper School Teachers Workshop
Charlie Watson - The Tuition Centre, WA
This workshop is a hands-on session for teachers to explore some of the not so obvious features of the Casio ClassPad that are useful for them and their upper school students. We will be jumping between Main, eActivities, Geometry and most other applications. Participants are assumed to have a reasonable working knowledge of ClassPad to keep up with the hands-on activities, but if you don’t, just come along, sit back and let the ideas wash over you. Bring your own ClassPad where possible and you can load copies of the activities onto it. Note: There will also be ClassPad’s to borrow.
Repeated as H37
C52  It’s Christmas! Let’s Celebrate and Pop a Cork… or Two!
Workshop  Years: 10 to 12
John Bament - O’Loughlin Catholic College, NT
We are going to investigate how pressure changes and makes a particular sound; for example, when you open a champagne bottle by using a pressure sensor with a syringe. The syringe represents the bottle and the plunger represents the cork; the sensor measures how the pressure changes over time when you pull the plunger from the syringe. We are going to set up our own experiment and see how you can configure sensors and triggers so you will not miss the actual ‘pop’.

Repeated as H38

C53  Is there Harmony in Polynomials?
Workshop  Years: 12 to 12
Marc Adam - St Mark’s Anglican Community School, WA
This session makes use of the CAS facility on the calculators to investigate patterns and relationships between successive roots of generalised polynomials to arrive at some intriguing results. It is a great way to use CAS to explore ideas useful for high school algebra and leads simply to some extending students a little beyond the scope of the course. The activities can be done on any platform that has CAS and geometric construction capability.
Note: Please bring TI CAS calculator.
Repeated as D49

SESSION C-D: 2:30pm – 4:50pm Thursday 6th December

C-D1  Teaching and Learning Maths Through Games
Workshop  Years: F to 6
Peggy Ashton - Latrobe University, VIC
Jennifer Vincent - Birmingham Primary School, VIC
This session will explore a variety of games for developing students’ mathematical skills and concepts. The purpose and value of incorporating games into the classroom program will be outlined. Participants will have the opportunity to workshop a variety of games, providing a rich resource for use in their own classroom. A CD of all materials will be provided.
Not repeated

C-D2  Teach Maths with Games Using Mangahigh.com
Computer Workshop  Years: 2 to 10
Mohit Midha - Mangahigh.com, VIC
Commercial Presentation
Mangahigh.com is the first curriculum compliant digital-games-based maths resource designed to be used by schools. It inspires incredible enthusiasm amongst students, while offering unique insights to teachers on students’ ability and effort. The recent launch of m-sensei, a virtual tutor, creates an individualised learning program for each student - personalising their learning, identifying gaps in their skills and recommending activities to address these gaps. Mangahigh, wildly popular in the UK and US, is now available to schools across Australia, offering the Australian Curriculum. Join us for this presentation and receive your FREE 30day trial.
Repeated as F-G1

C-D3  Having Fun with Numeracy and Maths
Workshop  Years: 4 to 10 & VCAL
Dave Tout - ACER, VIC
In order to engage most students in maths and numeracy in the middle years and VCAL the maths taught needs to move beyond the textbook, worksheets and chalk and talk to offer an alternative approach and a chance for ALL students to succeed and enjoy maths. In this hands-on workshop participants will experience a range of games and activities suitable for classroom use. The activities focus on the development of core maths skills through approaches such as co-operative group work that also encourage the development of mathematical language, the use of real-life and hands-on materials, as well as on enjoyment and having fun with maths. The maths content will focus on areas such as number, measurement, statistics and data and location and direction and the activities will illustrate alternative approaches to the traditional worksheet or textbook approach for teaching numeracy and maths.
Not repeated
C-D4  Enrich Student Learning with TI-Nspire PublishView
Computer Workshop
Neale Woods - Distance Education Centre Victoria, VIC

PublishView is one of the dynamic features of the TI-Nspire software. PublishView documents allow the user to create electronic documents that incorporate text, images, videos and internet links, as well as the seven TI-Nspire applications. These powerful documents allow teachers and students the opportunity to create a wealth of material to enrich learning in the mathematics classroom. In this session, participants will have a hands-on opportunity to learn how to create TI PublishView documents. Creating animations and Lua programming will also be covered in the session. This workshop is suitable for both CAS and non-CAS.

Note: A computer lab will be provided. Participants may elect to bring their laptop as well.

Not repeated

C-D5  What Could/Should a School CAS Look Like?
Workshop
Dr Stephen Arnold - Compass Learning Technologies, NSW

The computer algebra systems that we currently use are based on a foundation that was never intended for the classroom, and we continue to bear that burden as we seek to implement them as tools for learning mathematics, and not just tools for doing mathematics. This is particularly evident when we consider the potential for such use within the junior secondary years. In this session we consider some of the issues and concerns, and raise some possible directions that may serve to make these powerful tools more appropriate for classroom use. A prototype (developed in TI-Nspire using Lua) is offered for consideration.

Not repeated

C-D6  Further Maths SACs - Design and Assessment
Workshop
Andrew Stewart - Presbyterian Ladies’ College, VIC
Fiona Latrobe - Ballarat Grammar School, VIC

Two experienced FM teachers will discuss a number of alternatives in grading/assessing SACs. SAC designs for the Core and a number of SAC types for the Modules will be presented, and participants will be encouraged to share their experiences.

Repeated as F-G

SESSION D: 3:50pm - 4:50pm Thursday 6th December

DK1  Differentiation - Practical Strategies That Really Work
Keynote
Tierney Kennedy - Consultant, QLD

The reality of modern classroom teaching is that no teacher has a class of students who are all working at the one level. Teachers who aim their maths lesson at only one or two groups of learners are choosing to believe in a myth that this type of class still exists, if in fact it ever did. With the added stress of implementing the Australian Curriculum while catering for the diversity of learners that exist in the average classroom, teachers will find this keynote address refreshing and timely. Tierney Kennedy will share personal experiences and highly practical tips for differentiating within single-grade and multi-level classes rather than generic advice, principles and theories.

Tierney Kennedy is a practicing teacher, author and mathematics consultant from Queensland. She is the author of over 50 books, including the MASA and MAWA recommended series Back-to-Front Maths. Tierney has worked with hundreds of schools across the country on implementing the Australian Curriculum, including one and two teacher schools for whom differentiation is a necessity, not simply a suggestion.

D2  Starters and Independent Activities for the First Years at School
Workshop
Viv Thompson - Otago University College of Education, New Zealand

This workshop will provide a selection of practical ideas to start a mathematics lesson with young children. It will also include a number of relevant independent activities which relate directly to the starting activity allowing opportunities for children to practise in pairs and small groups.

Repeated as C2
D3 Picture Books and Mathematics
Workshop

Dorothy Butterfield - University of Otago, New Zealand

This workshop will use picture books and other materials to develop understandings of number, space or measurement.

Repeated as C3

D4 Engaging Students Through Differentiated, Web-based Learning
Computer Workshop

Alan Power - MyMaths Pty Ltd

MyMaths is a superior, web-based, interactive T&L resource covering each curriculum Year K-12. Lessons merge teaching and learning to enable teachers to develop a mentoring style and to engage students in a differentiated, interpersonal way. The MyMaths Assessment Manager is a powerful support platform for the T&L resources which enables continuous assessment of each student’s learning performance and provides all the information necessary to optimise learning profiles for as long as the students are at the school. Hands-on workshops will focus more on the Assessment Manager.

Repeated as G4

D5 What I Have to Teach Algebra!
Workshop

Sharyn Livy - The Mathematical Association of Victoria, VIC
Tracey Muir - University of Tasmania, TAS

Number and algebra can be developed together, as each enriches the study of the other. During this workshop a range of tasks will be presented that will assist your students to recognise patterns, conduct investigations, solve problems and communicate their reasonings for algebra.

Repeated as C4

D6 How We Introduced Personal Learning at Tallis Street
Workshop

Pat Conheady - NBC - Tallis Street, VIC
Michelle Gawronski - NBC - Tallis Street, VIC

As primary maths specialists we have had the opportunity to look at data then introduce change to improve student outcomes. Beginning with changes in planning and the way we look at our personal learning.

Repeated as C6

D7 Student Reflection
Workshop

Sheila McCarthy - Northern Bay College, VIC
Sandi Warrick - Northern Bay College, VIC

This session aims to increase knowledge of the importance and purpose of student reflection and to provide ideas for teachers to develop those skills with their students. Teachers need to:

◊ Be aware of the importance and purpose of student reflection.
◊ Understand how questioning encourages student reflection.
◊ Be aware of the importance of timing.

It also aims to provide teachers with ideas that will help to develop the skill of student reflection so that they have:

◊ Improved understanding of learning.
◊ Increased confidence.
◊ Increased knowledge of learning behaviours that encourage success.
◊ Increased ability to work as supportive team members.
◊ Increased ability to set goals and reflect on their achievement.

Repeated as C7

D8 Fluency Activities to Consolidate Number Learning
Workshop

Hayley Hoy - Koroit and District Primary, VIC
Rachael Lenahan - Koroit and District Primary, VIC

This is a hands-on workshop that gives classroom teachers daily activities that will promote fluency in mathematics. Developing mathematical fluency is best done little and often rather than in less, frequent, longer blocks of time. We will share our experiences with tracking student improvement and retention of concepts and strategies as well as those tried and tested high quality experiences.

Repeated as G6
D9 Place Value and Estimation
Lecture
Rob Proffitt-White - Principal Education Advisor-ACARA, QLD

This session takes the audience through the development of place value through the different proficiency strands. It looks at tried and tested activities that schools have been adopting in the last 6 months to gauge students’ procedural and conceptual knowledge of place value from the Early Years into the lower Secondary Schools. Rob will share some results and teacher ideas from small research projects that he has developed in schools throughout the last 12 months.

Not repeated

D10 How Can We Use Google Earth in Mathematics Class
Computer Workshop
Dennis Fitzgerald - Siena College/Deakin University, VIC

Google Earth is a free program that most students and teachers are familiar with although mostly to view their own house. Google Earth has measurement capabilities and works in a number of measurement units as well as longitude and latitude. With the use of GPS devices students can develop a better understanding of shapes and scale.

Repeated as E12

D11 From NFI to WTF A Strategic Shift
Workshop
Prof Martin Westwell - Flinders University, SA
Kristin Smith - Flinders University, SA
Deb Lasscock - Flinders University, SA

From Not Following Instructions to Willing To Fail. The Australian Curriculum demands a transformation in the students’ experiences from passive compliance to active learning. Research findings give educators some insights into the ways that student cognition and learner self-concept underpin this transformation. Student abilities to see themselves as effective learners and develop their stop and think skills are shaped in the classroom. Traditionally this has been left to chance but we are now in a position like never before to take control. This presentation will be followed up with workshops throughout the conference.

Not repeated

D12 MAV Maths Talent Quest - Working Mathematically, Investigation Projects Workshop
Workshop
June Penney - VIC
Kelly Gallivan - St Kevin’s Secondary School, VIC

The Maths Talent Quest (MTQ) has been running for over 30 years and continues to be an important component of the MAV’s student activities program. MTQ involves students engaging in personally chosen ‘real life’ maths investigations. The categories include all Primary and Secondary year levels and the investigations may performed by individuals, groups or classes. Do you want to find out more about the MTQ and how it links to the curriculum? Do you have a personal interest or do you want to find out how to run it at your school? Come join us! You will also be provided with the opportunity to ask questions, discuss ideas and read past investigations.

Repeated as C12

D13 Mathletics “Assessment and Reporting”
Computer Workshop
Andrew Nicholls - 3P Learning, NSW
Lauren Anderson - 3P Learning, NSW

Commercial Presentation
This course is all about how to use results obtained within Mathletics to drive student learning in schools. It steps teachers through the process of using Mathletics for formative assessment, identifying areas of strength and weakness by looking at individual student data in Results Manager. Teachers are shown how to respond to this form of assessment by creating subsets (groups) within their class to extend or consolidate the knowledge of the different ability groups. Teachers are shown how to modify course curriculum content in order to design individual or group programs of study for students who need greater degrees of differentiation.

Repeated as F17

D14 Open and Closed Questions for Differentiated Learning
Workshop
Greg Butler - CampHill Primary School, VIC
Fiona Lindsay - CampHill Primary School, VIC
Leanne Cummings - CampHill Primary School, VIC

A hands-on session using both open and closed questions and different types of scaffolding techniques to use the
same question to meet the mathematical abilities of your whole class. A variety of problem solving experiences will be provided with opportunities to formulate your own questions and scaffolding strategies with a little bit of assessment and fun thrown in.

**Repeated as C17**

**D15 Higher Order Thinking Tasks for Low Achievers in Mathematics**

Lecture

*Pearlyn Gan - National Institute of Education, Singapore*

*Mei Yun Ng - Fairfield Methodist School (Primary), Singapore*

Previous studies have found that low achievers make considerable progress when they engage in tasks that foster higher order thinking skills. In this study, three higher-order thinking tasks related to the topic of fractions were assigned to students of mixed ability in Primary 3. We are interested to find out whether these tasks are effective in helping the low achievers understand fractions better and if low achievers can perform higher order thinking tasks as well as high and middle achievers.

**Repeated as A20**

**D16 Grouping for Problem Solving: ‘Same Pace of Thinking’**

Workshop

*Dr Gaye Williams - Deakin University, VIC*

*Judy Harrington - Brunswick South West Primary School, VIC*

*Sharon Goldfinch - Brunswick South West Primary School, VIC*

Gaye and teachers at Brunswick South West Primary School have worked together since 2004, developed strategies for implementing problem solving in mathematics, and investigated effects of varying group composition. In this session, Gaye (previous classroom teacher now researcher), and Judy and Sharon (Grade 5/6 teachers) share what they have learnt about how grouping by ‘same pace of thinking’ rather than performance (mixed, similar) can increase learning opportunities. Participants will work in small groups, try grouping their own students this way, and develop strategies, and identify issues for discussion. Bring a class list (and maybe individual student work): to stimulate thinking/discussion.

**Note:** Not obligatory - Can bring class list and examples of those students’ problem solving activity.

**Repeated as H13**

**D17 Focusing on the Language of Mathematics to Enhance Understanding, Years 3-8**

Workshop

*Anita Chin - Anita Chin Mathematics Consultancy, NSW*

Mastering the language of mathematics and understanding the content can be challenging for many students and not just ESL learners. The components of the Proficiency strands of the ACM provide the language to build in the developmental aspects of the learning of mathematics. This hands-on workshop will provide practical ideas for embedding rich mathematical language into the mixed ability classroom for number and geometry concepts. Strategies for scaffolding will be modelled to make tasks accessible, rigorous and engaging for all students. Assessment ideas will include the use of open-ended questions. References to NAPLAN questions and blackline masters provided.

**Repeated as C23**

**D18 Using Whole Numbers and Number Lines to Develop Fraction Concepts**

Workshop

*Catherine Pearn - University of Melbourne, VIC*

*Dr Max Stephens - University of Melbourne, VIC*

This presentation focuses on students’ use and understanding of number lines in two main ways. First, it examines how students represent fractions on a number line, particularly the strategies they employ when placing simple fractions on a number line, without necessarily measuring, but relying on making sensible subdivisions ‘by eye’. A second focus is on how number lines, initially involving whole numbers and their fractional parts, can be used to develop fractional language and to articulate fractional concepts that can subsequently be applied to fractions themselves.

**Repeated as G22**

**D19 4 Arm Shapes & Other Visual Algebra Experiences**

Workshop

*Douglas Williams - Black Douglas Professional Education Services, VIC*

4 Arm Shapes looks so much like a text book exercise. However, by approaching it as a mathematician might and drawing on best practice teaching craft, it becomes a challenge that introduces generalisation in words and symbols, substitution, solution of equations, equivalent algebraic expressions and linear graphs in a concrete, visual manner that makes sense. If you have ever thought your students haven’t really ‘got it’ with a text-based approach to algebra, then building in more of these visual algebra experiences might make the difference.

**Not repeated**
D20  To LAF or Not to LAF That is the Question?
Workshop  
Christine Lenghaus - Traralgon College, VIC  
Jason McIntosh - Traralgon College, VIC  
Years: 5 to 8

Multiplicative thinking is no LAFfing matter! The Learning Assisted Framework (LAF) is a DEECD resource which our school has run over the past three years for our Year 7 students. It is designed to scaffold a student’s learning in moving from additive thinking (35+35+35) to multiplicative thinking (3x35). This mode of thinking is the basis to move our students on in fractions, algebra, ratio and other topics. In class, our LAF lessons are run in groups of like ability, so come and see how we have evolved this resource, run it in our classrooms and experience some of the activities!

Repeated as H17

D21  Teaching Families to Learn Maths at Home
Lecture  
Nathaniel Bradshaw - Caroline Chisholm Catholic College, VIC  
Justin Matthys - Caroline Chisholm Catholic College, VIC  
Years: 5 to 9

In this session three Family School Partnerships activities will be presented. These are college-run and involve family participation and peer-to-peer mentoring. The “Learning at Home” program provides an environment where families participate in numeracy exercises with a view to better being able to support learning at home. At the “Gaming Choices” evening, students present to an audience of their peers and parents about different types of video games, their potential benefits and potential risks. “Maths Club” is a weekly program where senior mathematics students tutor junior students who are in need of numeracy support. The session will equip attendees with a model for running similar programs successfully within a school, as well as relevant web-based resources.

Note: These sessions are relevant to staff members involved in Wellbeing.

Repeated as C30

D22  Make Australian Curriculum Algebra Interesting and Understandable
Workshop  
Dr Ian Lowe - The Mathematical Association of Victoria, VIC  
Years: 5 to 10

Algebra and Number are wisely linked in the Australian Curriculum, as Algebra is based on generalisations about numbers. Participants in this workshop will explore a number of hands-on activities from Years 5 to 10 that assist students to understand the meaning of algebra, from patterns, functions and graphs, to equation solving, factorising and expanding. Examples will come from Maths300, RIME and Active Learning and be linked to the “Teach Maths for Understanding” Differentiated Unit Plans.

Not repeated

D23  Spook Numbers? Squimes? Invent Your Own Finite Set
Lecture  
Bruce Henry - Australian Maths Trust, VIC  
Years: 5 to 10

97364 is a squime. Its first digit is a prime or a square, the next two digits (97) make a prime or a square. The next two digits (73) make a prime or a square, the next two (36) do, as do 64. The last digit is a prime or a square. There are no zeros and no repeated digits. The set of squimes is clearly finite. This session will look at some finite sets like squimes and show how they can be used to produce different, interesting classroom activities.

Repeated as E25

D24  Online Maths Resources
Computer Workshop  
Hang Nguyen - Koonung Secondary College, VIC  
Years: 5 to 10

Teachers will be shown a wide range of free resources and programs that are available online; including Maths activities, to printable worksheets, to downloading videos from Youtube.

Note: Please bring along a USB stick.

Repeated as H19

D25  Analysing Students’ Result Through Box-Plot Using Excel for Middle to Later Years Mathematics
Computer Workshop  
Iqbal Hossain - The Grange P-12 College, VIC  
Rudy Birsa - Williamstown High, VIC  
Years: 5 to 12

A Boxplot is a convenient way of graphically depicting numerical data. This is a very effective means of visually displaying single or multiple data sets. Differences between data are readily discernible using this method of representation. In this hands-on session, participant will use students’ results (i.e. sample data) to construct box plots using MS Excel software. A comparison between the plots will be made based on a statistical understanding of each individual plot. This is a very useful tool in assessing where students strengths or weaknesses lie. The session is suitable for teachers with beginner level MS Excel skills.
Note: Participants should bring a USB stick (a laptop is optional).

Repeate as E29

D26 Using GeoGebra to Enhance Teaching of Primary School Mathematics
Lecture

Years: 6 to 7

Foo Him Ho - National Institute of Education, Singapore,
Cher Hern Koh - Pei Hwa Presbyterian Primary School, Singapore

GeoGebra as an open-source Dynamic Geometry Software has been gaining popularity amongst secondary school mathematics teachers in Singapore. However, the use of GeoGebra in our primary school mathematics teaching has been rather minimal and superficial. In this presentation we will demonstrate and explain with a few suitable problems on geometry and ratio, how teachers could enhance pupils’ learning by using GeoGebra constructions and applets to engage pupils in mathematical problem-solving and explorations in an interactive and collaborative learning platform.

Repeate as A31

D27 Using Mathematica in the Classroom - By Teachers for Teachers
Lecture

Years: 10 to 12

Karen Reid - Broadford Secondary College, VIC
Carmen Popescu-Rose - Loreto Mandeville Hall, VIC

Mathematica is computational software which we, as teachers, have discovered to be a very powerful teaching and learning tool. It helps demonstrate concepts, create supporting course materials, assessment tasks, and presentations, and engages students in interactive learning, exploring and developing an understanding of mathematical concepts. It can be used from basic computations to very complex operations. Bring your laptop and begin to explore and use some of the functionality of Mathematica for the classroom. Teachers from government schools have access to Mathematica as part of the EduStar package. Teachers who do not have a Mathematica licence can download a free trial version from Wolfram Research.

Note: Bring your own laptop, fully charged, with eduStar image or Mathematica downloaded. (Free 30 day trials usually available).

Repeate as H40

D28 ‘Realistic Mathematics Education’ for Secondary Maths
Workshop

Years: 7 to 10

Bruce Schmidt - Grampians Regional Office, VIC
Peter Durance - Stawell Secondary College, VIC

The Dutch approach to teaching mathematics ‘Realistic Mathematics Education’ (RME) has 6 guiding principles that can be used as a framework to guide the development and teaching of a secondary maths unit of work. RME particularly promotes ‘learning by doing’, the value of social interaction in the learning process, and the importance of guiding students to experience the development, usefulness and relevance of mathematics with curriculum goals in mind. This workshop will present an overview of RME and its principles, and how they translate into practice with some example activities and experiences.

Repeate as C37

D29 Using Qedoc on Netbooks to Provide Multimedia Differentiation with LMS Student Tracking
Lecture

Years: 7 to 10

Damien Bushby - VIC

Qedoc reader is free software that runs well on netbooks to allow multimedia questions. Student tracking is available on an LMS (such as on Moodle via QuizPort) without the need for continual server access. Teachers can create their own publically available modules (free version) or limit access to their school (paid licence). As well as mathematical based questions containing variable (randomly generated) values there are questions types that can contain sounds and pictures. With thoughtful structuring of modules students can be differentiated towards consolidation, standard progression or acceleration.

Note: Please bring your own laptop - fully charged.

Repeate as H24

D30 Middle School Mathematics: An Integrated Approach Using Manipulatives, MATHOMAT and Geometry Software
Workshop

Years: 7 to 10

John Lawton - Objective Learning Materials, VIC
Michael O’Connor - St Francis Xavier College, VIC

This workshop explores the integration that is possible between widely available classroom materials such as pattern blocks, the MATHOMAT template and THE GEOMETERS SKETCHPAD software. Participants will explore some of the mathematics in a series of lessons being published by OLM adapted to the Australian curriculum by Michael O’Connor from the original US series written by Henri Picottio. These lessons will support and enrich
middle school mathematics classes of all ability levels. The integrated and creative use of a variety of popular resource materials demonstrated in this workshop provides excellent opportunities for discussion with students about subtle and important ideas.

Repeated as E34

D31 Oranges or Lemons - CAS in the 7-10 Curriculum
Workshop
Gael McLeod - Pearson, VIC
Antje Leigh-Lancaster - Pearson, VIC
Commercial Presentation
How could CAS enrich the 7-10 curriculum? How could it be used to improve mathematical understanding? This session is aimed at 7-10 Mathematics teachers who are unfamiliar with CAS. Explore how the new Australian Curriculum Pearson Mathematics series has integrated CAS technology and discover that CAS is an exciting teaching tool - oranges dipped in chocolate. Both TI-Nspire and Casio ClassPad calculators will be available, however you are welcome to bring your own.

Repeated as G32

D32 Resourcing Financial Literacy in the Australian Curriculum
Computer Workshop
Anne Nunan - Financial Basics Foundation, VIC
Katrina Birch - Financial Basics Foundation, VIC
Traditionally, only students studying Business and SOSE have been exposed to financial literacy education. Mathematics has a significant role in supporting young people to become financially literate. Financial Literacy is also an ideal context for developing competency and confidence in numeracy. Implications for curriculum development in Mathematics, and methods of implementation will be addressed. A range of strategies for incorporating ESSI Money within the middle school curriculum will be demonstrated in a practical session. ESSI Money is an engaging digital resource which provides an opportunity for middle school students to learn how to better manage personal finances. Financial Basics Foundation is a registered charity. FBF teaching resources are provided FREE OF CHARGE to all Australian secondary schools.

Repeated as C41

D33 The Quantified Self - Collecting and Visualising Data About You…
Computer Workshop
Colin Chapman - International School Winterthur, Switzerland
The quantified self framework seeks to collect data using simple technologies about an individual’s inputs, states and performance. The framework foregrounds data processing, analysis and presentation to facilitate decision making for participants. The session will be interactive featuring platform neutral techniques for collecting data about the self. A broad range of data collection techniques will be explored using a variety of different microprocessors, smartphones and physical instruments. Cloud based cooperative tools for data processing, analysis and presentation will be featured and explored for opportunities to engage classroom participants in collaborations that reach beyond the borders of their school.

Repeated as C43

D34 Physical, Hands-On Activities for General and Further Mathematics
Workshop
Kara Fox - Bendigo Senior Secondary College, VIC
Duane Anderson - Bendigo Senior Secondary College, VIC
Mathematics in a secondary classroom can sometimes be a static, unimaginative environment where students are caught in a routine that bears little relevance to the world we live in. As part of our Professional Development goals we actively implemented a range of physical and hands-on activities in our General Maths and Further Maths class in order to engage a wider range of learners and also bring a point of difference to our classes. In this workshop we will be sharing some of these ideas.

Note: Please wear footwear and clothing appropriate for light physical activities.

Repeated as C44

D35 MATHSPACE- Never Mark Homework Again. Seriously
Computer Workshop
Mohamad Jebara - Mathspace Pty Ltd, NSW
Commercial Presentation
Imagine if you didn’t have to worry about tediously marking homework - if marking could be done automatically, so you could focus on teaching. Imagine being able to snapshot each of your students’ strengths and weaknesses in a few seconds. Imagine an online maths tool that taught students how to set out their working. Mathspace is a structured and thorough math teaching and learning tool suite, not a simple multiple choice game. It allows
students to input FULL working for algebra, geometric proofs and reasoning, and even allows students to easily draw probability trees and their own graphs, all on the one page.

**Note:** To get the most out of the session bring a laptop/iPad/tablet along with you.

**Repeated as E40**

**D36 Efofex on the Mac**

**Lecture**

*Paul Hooper - Efofex Software, WA*

**Commercial Presentation**

Efofex is releasing its products on the Mac platform. This session will show participants how to use the products in a Mac environment and a dual platform (Mac & Win) school.

**Not repeated**

**D37 Creating Quizzes and Tests Using Mathematica**

**Lecture**

*Craig Bauling - Wolfram Research Inc, USA*

As instructors we continually strive to create student assessments that are relevant to curriculum standards, consistent with the uses of technology in our schools, easy to grade and fair to all levels of students. These and other requirements make the creation of assessment tools like quizzes and tests challenging. Join Craig Bauling from Wolfram Research as he presents a variety of assessment formats developed using Mathematica. Many of these have been used by teachers in their assessment activities. Attendees will be given access to presented resources so they can adopt them to their personal classroom setting.

**Not repeated**

**D38 Lucky Colours of Sunshine: Teaching the Mathematics of Gambling Loss**

**Workshop**

*Donald Smith - VIC*

*Joe Wilson - Wesley College, VIC*

Lucky Colours of Sunshine is a simple gambling game, which is thoroughly analysed by collection and display of in class participant data, and comparison with expectation over time. New this year are interactive displays in Mathematica, freely available, which help to ram home the reasons why you can’t win in the long run on commercial chance gambling like poker machines. Participants will be provided with classroom teaching support materials ready to use in both paper and electronic form.

**Not repeated**

**D39 Mobile Phone Plans: Which Offer Do You Choose?**

**Workshop**

*Kevin McMenamin - The Peninsula School, VIC*

The multitude of mobile phone plans out there provides a wonderful opportunity to create a mathematical investigation for middle school students using CAS technology. The task you will work through in this session gets you to simulate, model and investigate a selection of plans using the CAS technology with the aim of deciding on the ‘best plan’. The focus of the task is using the random number, spreadsheets and graphing functionality of the technology to quickly and efficiently model the use of a mobile phone. The investigation also aims to give students a good understanding of how mobile plans work. The featured calculator will be the Casio ClassPad but the task is applicable to any CAS.

**Note:** Bring along your own calculator. Some ClassPads will be available for loan.

**Not repeated**

**D40 Never Used a ClassPad and Need to Know How?**

**Workshop**

*Anthony Harradine - Potts-Baker Institute, Prince Alfred College, SA*

This workshop is for those who have never used a ClassPad and would like to learn the fundamentals in a short space of time. You will leave with support materials that will assist you in taking the next step. A tried and proven workshop that will have you using the machine with confidence by the end of the hour.

**Note:** ClassPads will be available for loan during the session.

**Repeated as A43**

**D41 Mathematica™: Pandora’s Box or Classroom Empowerment I? Teaching with Mathematica™**

**Lecture**

*Dr Brenton Groves - Independent Researcher, VIC*

The amount of material on the web is huge: The Virtual Book (10,000 pages); Tutorials, how-to’s and white papers; Alphabetical site index; Wolfram MathWorld (13,086 entries); Wolfram Web Resources (blog.wolfram.com, forums. wolfram.com, www.mathematica-journal.com); Wolfram Education Group Courses; Interactive demonstrations under
the Wolfram CDF. Everything can be downloaded for free and Mathematica™ is not required. This presentation will outline a path through the Wolfram maze with selective interactive demonstrations of common mathematical topics. It will be available on the web so teachers can investigate the material at their own pace afterwards.

**Repeated as A45**

**D42 Unwrapping the Circle**  
**Workshop**  
Assoc Prof Susie Groves - Deakin University, VIC  
While an understanding of trigonometry and trigonometric functions is an important part of secondary school mathematics, the ‘triangle approach’ emphasises computation and procedural skills and makes it difficult for students to move to a deep understanding of sine and cosine as functions defined on a unit circle. This workshop will explore ways of enhancing students’ understandings of circular functions and angular measurement in radians through a model of motion on a ferris wheel using the MATHOMAT in its concrete and online (virtual) versions as a powerful tool to integrate graphical and algebraic aspects of trigonometric functions.  

**Not repeated**

**Lecture**  
Daniel Milutinovic - Southern Cross Micro, VIC  
Christopher Longhurst - Australian Catholic University, NSW  
Using hand-held technology in the classroom has been both a breakthrough in making mathematics real for students and a new pressure on the teacher. Using technology should be an easy, seamless process for both teacher and student. In this workshop we will demonstrate that simple programs written for the hand-held device can be an advantage not only for the explanation of difficult concepts but allow the student to visualise the mathematical concepts fully. A library of applications, created specifically to address the needs of students studying mathematics in Victorian secondary schools, comprises a set of powerful programs that employ intuitive, easy to use interfaces grouped according to subject. Students can, for example, run a program in the Specialist Mathematics folder to study motion on an inclined plane, a program in the Mathematical Methods folder to study the unit circle or estimate the gradient of a curve at a point, or a program in the Further Mathematics folder to automatically smooth data or find the maximum flow in a network. This allows lessons to be easily planned, taught and understood by the students.  

**Note:** A class set of hand-held calculators will be provided for participants to use throughout the presentation.  
**Repeated as H36**

**D44 Mathematica Notebooks as Pedagogical and Assessment Tool for Mathematical Methods (CAS)**  
**Computer Workshop**  
Trevor Raine - Maffra Secondary College, VIC  
Jennifer Palisse - Mater Christi College Belgrave, VIC  
Dr David Leigh-Lancaster - Victorian Curriculum Assessment Authority (VCAA), VIC  
Participants will work with sample Mathematica notebooks developed as pedagogical and assessment tools for Mathematical Methods (CAS) Units 1-4 as part of a small scale VCAA computer-based exam trial. These notebooks are teacher and/or student interactive digital files that incorporate text, graphics and computations, and can be readily shared and modified. Benefits and challenges from implementation experience in 2012 will also be discussed briefly. No previous experience with Mathematica is required, however participants should be familiar with working in a Windows environment.  

**Repeated as C49**

**D45 Colourful Conics on the TI-Nspire CAS**  
**Workshop**  
Raymond Rozen - RMIT, VIC  
Shirly Griffith - Jacaranda (Wiley), VIC  
Commercial Presentation  
In this hands-on session participants will have the opportunity to engage with a number of mathematical activities which use the TI-Nspire CAS calculator with Operating System v3.2. Investigations include some of the new features of Version 3.2 and other activities, including creating a locus of points for ellipses and hyperbolae. These activities are suitable for the TI-Nspire CAS ClickPad and TouchPad and Teacher Software. Previous experience with using the TI-Nspire is not essential.  

**Note:** Calculators will be provided but you may bring a TI-Nspire handheld, or laptop with the TI-Nspire software v3.2 installed.  
**Repeated as F41**
D46  Hands-On in the Upper School with ClassPad eActivities
Workshop  Years: 10 to 12
Charlie Watson - The Tuition Centre, WA
The incredible flexibility and diverse applications of eActivities is often overlooked by many ClassPad users. This workshop is a hands-on session for upper school teachers to see what’s possible and then develop their skills in using and creating eActivities to pass on to their students. Participants are assumed to have a reasonable working knowledge of ClassPad to keep up with the hands-on activities, but if you don’t, just come along, sit back and let the ideas fire up your enthusiasm. Bring your own Classpad where possible to load free copies of example eActivities onto it.
Note: There will also be ClassPad’s to borrow.
Repeated as G43

D47  Travel to the 7 Wonders of the Natural World
Workshop  Years: 10 to 12
Brett Stephenson - Guilford Young College, TAS
The Travelling Salesman Problem has been a classical mathematics and computer science problem that was first posed in 1930 but has remained ‘unsolved’. Despite this, the problem can be presented to students and considered when looking at an activity to find the shortest possible distance travelled to get to a number of cities (or wonders). This session will look at travelling to the 7 wonders of the world and how we can utilise technology as the Casio ClassPad to assist us.
Note: Bring a graphics calculator if you have one. There will be Casio ClassPad 300’s available for participants who do not have one.
Not repeated

D48  The Shoemaker’s Knife
Lecture  Years: 10 to 12
Hussein Tahir - VIC
The Shoemaker’s Knife (Arbelos) is the region enclosed by three semicircles on the same diameter. This geometric characteristic has amazing properties, some of which were first pointed out by Archimedes. Over the years, more mathematicians have investigated the Arbelos and added to its many interesting features. Do yourself a favour - find out about the mysterious properties of the Shoemaker’s Knife and take it into your classroom and fascinate your students!
Repeated as G44

D49  Is there Harmony in Polynomials?
Workshop  Years: 12 to 12
Marc Adam - St Mark's Anglican Community School, WA
This session makes use of the CAS facility on the calculators to investigate patterns and relationships between successive roots of generalised polynomials to arrive at some intriguing results. It is a great way to use CAS to explore ideas useful for high school algebra and leads simply to some extending students a little beyond the scope of the course. The activities can be done on any platform that has CAS and geometric construction capability.
Note: Please bring TI CAS calculator.
Repeated as C53

SESSION E: 9:00am - 10:00am Friday 7th December

EK1  Give Me One Good Reason
Keynote  Years: F to 6
Dr Leicha Bragg - Deakin University, VIC
Give me one good reason why we should be focusing on mathematical reasoning in the primary classroom. What is our argument for its inclusion? How can we justify it? Wait a minute, isn’t answering these questions reasoning? Reasoning is one of the proficiency strands in the Australian Curriculum: Mathematics. The proficiency strands engage our students in thinking and doing mathematics and are the glue that ties together the content strands. In this presentation I will give you more than one good reason for the inclusion of reasoning in your daily practice. An array of stimulating tasks, strategies and question prompts developed over time through my classroom practice and research, and informed also by the resources from the AAMT / MAV In Teacher’s Hands Project and findings from the Deakin University Mathematical Reasoning Research Group (MaRRG) will be presented to encourage primary students to analyse, justify, and explain their thinking.
Dr Leicha A. Bragg is a Lecturer in Mathematics and ICT Education at Deakin University, Melbourne and a recipient of the 2011 Australian Learning and Teaching Council Citation Award for Outstanding Contributions to Student Learning. Leicha explores approaches and programs to teaching that are engaging, fun and most importantly further students’ mathematical understandings. Her research includes exploring the impact programs, such as geocaching, have on students’ mathematical learning. Through well-received, national and international professional development workshops and conference presentations, Leicha offers enriching tasks that stimulate and motivate students and teachers alike.

**EK2  Maths and Games**

**Keynote**

Dain Hedgpeth - Frosch Media, NSW

A childhood lover of physics and math, Dain almost strayed from the path when due to what he saw as a lack of practical application or realistic career opportunity, he entered the corporate sector. He later re-engaged with his old passion for science and set up his own business making video games, 3D graphics and interactive technology. Years later and he has had the chance to build a surfing video game, design a car racing simulation to run on the world’s largest iMax screen and work on a project to carry the highest hot-air balloon mounted camera into space. This talk shares with educators some of the cool life opportunities science and math can provide in a time when technology is one of the most exciting fields to be in, opportunities which might be obscured from the average classroom student struggling to get the hang of basic vector algebra and seemingly pointless Greek symbols.

Dain completed high school in 1999, BSc in science at Macquarie University (2002-2006) and honours in Physics from UNSW in (2006-2007). He entered a career in market research working at the NTF Group (2007-2009) and in 2009 he co-founded a business designing branded mobile applications. In 2010 he left the previous business and founded a new company in Sydney building video games and interactive media, with a specialty in 3D graphics and computer vision. He has performed as a speaker, storyteller and standup comedian locally and abroad since 2004.

**E3  Early Years Concept Map**

**Workshop**

Rob Proffitt-White - Principal Education Advisor-ACARA, QLD

This session uses a concept map and activities that take teachers through some of the key understandings of the number strand of the Australian Curriculum. It offers open ended ideas that can be immediately taken back to the classroom, allowing students multiple entry points and aiding teachers in differentiation.  

**Not repeated**

**E4  Children’s Literature in the Primary Mathematics Classroom**

**Workshop**

Dr Julie Clark - Flinders University, SA

This workshop will explore a range of children’s literature to support teaching mathematics in the Australian Curriculum (F-6). Participants will explore books such as The Greedy Triangle, Sir Cumference and the Knights of the Round Table and the Warlords series. Teachers will engage in some activities connected to the stories and discuss strategies to connect the books across the three mathematics content strands.

**Repeated as F**

**E5  Differentiating Instruction: Place Value Concepts, P-6**

**Workshop**

Anita Chin - Anita Chin Mathematics Consultancy, NSW

Children’s images of numbers and the development of place value understanding begins in the early years with counting and part-part-whole ideas and progresses to partitioning numbers in standard and non-standard forms. However, many students use inefficient strategies or rote-learnt procedures for computation and struggle with the concept of ten-ness. This hands-on workshop will provide practical ideas for differentiating both the concept being taught as well as the concrete materials being used. Participants will experience parallel tasks to meet the full range of all students’ needs and abilities at different developmental levels whilst addressing the same big idea. Black line masters provided.

**Repeated as F7**
E6  There’s More Than One Way to Flip a Shape
Lecture  Years: F to 6
Dan Jazby - Wales Street Primary, VIC
When conducting a lesson study into students’ development of spatial-visual reasoning, I uncovered a commonly
held teacher belief which negatively impacts on student learning; the belief that spatial-visual reasoning has to
be spatial-visual. Using a comprehensive review of the research literature on the development of spatial-visual
reasoning, results from the lesson study and two case studies of exceptional students, this presentation argues that
logical deduction is an overlooked yet essential element of spatial-visual reasoning. The presentation also provides
a summary of the key concepts students need to develop in geometry in primary school.
Repeated as H2

E7  Lesson Study at Parkwood Green Primary School
Workshop  Years: F to 6
Dr Brian Doig - Deakin University, VIC
Brooke McKerracher - Parkwood Green Primary School, VIC
Louise Spalliera - Parkwood Green Primary School, VIC
Tim Jenkins - Parkwood Green Primary School, VIC
There is growing worldwide interest in Japanese Lesson Study as a form of professional development, with large
scale adaptations of Lesson Study taking place in many countries around the world. This presentation will describe
a Lesson Study project being carried out in three Victorian schools in 2012. It will illustrate the typical Japanese
structured-problem-solving research lessons that form the basis for Lesson Study, and discuss how such research
lessons are planned, the role of the teacher, as well as identify issues relating to the adaptation in Australia of
Lesson Study as a means of professional development.
Not repeated

E8  Interactive Diagrams for Understanding Maths on a Computer - Primary
Lecture  Years: F to 6
Dr Ian Lowe - The Mathematical Association of Victoria, VIC
Commercial Presentation
Ian has become a master in the use for interactive diagrams, created in Excel, to help students develop their
understanding of mathematical ideas. These are available from MAV on the CD “Interactive Learning”. Ian will
demonstrate many of these in all curriculum areas, and show how they fit into the “Teach Maths for Understanding”
Differentiated Unit Plans.
Not repeated

E9  Probability and Statistics in The Australian Curriculum
Workshop  Years: F to 6
Laurel Smith - Thomas Chirnside Primary, VIC
This session has a focus on the implementation of the Probability and Statistics strand of the Australian Curriculum.
It will look at a range of tasks that can be fun and engaging for students while also being able to be used as
assessment tasks.
Repeat in F10

E10  Nelson Maths - 100% Coverage of the APPROVED Australian Curriculum
Lecture  Years: F to 6
Pauline Rogers - VIC
Commercial Presentation
Join our author team as they explain the series written specifically to assist teachers in the implementation of
the APPROVED Australian Curriculum, and showcase the components and features of Nelson Maths: Australian
Curriculum. The session will cover how we explicitly link the components to the F-10 Mathematics Curriculum
Strands, Content Descriptions and Codes; the importance of basing Nelson Maths on the final and approved F-10
Mathematics Curriculum; the detailed assessment component within the Student Book and how it specifically links
to the Australian Curriculum; how the series caters for a range of learning styles and the mixed ability class; how
the Teacher Resources will continue to support the whole class-small group-whole class approach and provide
teachers with an array of hands-on and investigative tasks; how the assessment components (including mid- and
end-of-year tests) which align with the Achievement Standards from the Australian Curriculum; explain the new
bridging book: Nelson Maths 6+ Extension Tasks; new ICT/IWB resources. All schools represented at the workshop
will be given a complimentary Nelson Maths: Australian Curriculum Student Book, sample units from the teacher
resources and handouts.
Repeated as G9
E11 Grading and Assessment  
Workshop  
Tierney Kennedy - Consultant, QLD  
Years: F to 9
What does it look like for students to get an A for maths now and how do we gather good evidence? How do we help students to improve? In this workshop we will discuss a simple assessment method and teachers will have a chance to grade actual student sample work!  
Not repeated

E12 How Can We Use Google Earth in Mathematics Class  
Computer Workshop  
Dennis Fitzgerald - Siena College/Deakin University, VIC  
Years: F to 12
Google Earth is a free program that most students and teachers are familiar with although mostly to view their own house. Google Earth has measurement capabilities and works in a number of measurement units as well as longitude and latitude. With the use of GPS devices students can develop a better understanding of shapes and scale.  
Repeated as D10

E13 Mathematics Education - Military or Democratic? You Can’t Have Both  
Lecture  
Dr Jude Ocean - RMIT University, VIC  
Years: F to 12
In this session I argue that traditional Australian mathematics education is military in style. I describe ‘military’ aspects such as silence, competitiveness, obedience, acceptance of hierarchy, the ‘drill and practice’ routine of many textbooks, and the use of language and teaching strategies that reflect a military agenda. Military systems are, by definition, not democratic systems; in fact they are the antithesis. This raises a perhaps unrecognised problem for teachers, who may inadvertently be working against democratic values when they teach mathematics in a traditional way. Examples will also be given of mathematics education initiatives that promote a democratic agenda.  
Repeated as F15

E14 GradeXpert Student Assessment Tracking Software  
Lecture  
Anthony Sacker - GradeXpert, VIC  
Commercial Presentation  
Years: F to 12
GradeXpert is a student assessment tracking software tool used by schools to centrally store, track and analyse student assessment results and outcomes-based progress, including NAPLAN, PAT and any other external or internal assessments. It is a central repository for student assessment results, digital attachments, individual learning plans, teacher comments and semester reports, enabling a school to easily create a complete, historical electronic portfolio for each student. Teachers can graphically analyse and compare student, class and year level progress from term to term and year to year and print a variety of comparative reports and graphs to ensure students who are falling behind or racing ahead can be quickly identified. Better than the Ultranet, faster than Excel and easier than 1-2-3!  
Repeated as C15

E15 Mental Thinking Using ‘Make The Target Number Strategy’  
Workshop  
Richard Korbosky - Maths Association of WA, WA  
Years: 1 to 8
In the classroom we are constantly asked to gain insights to whether students understand the mathematics they are using. This session introduces participants to the ‘make the target number strategy’ which is a strategy that can be developed for Year 1 to 8+. The ‘make the target number strategy’ sets up a number of organised activities which give students the opportunity to show how they mentally calculate, calculate in written form or calculate with a calculator. Mathematical ideas associated with the Year 1-8 ‘make the target number strategy’ include whole numbers, money, decimal numbers, indices, perimeter, area and the four operations. Mathematics ideas in this session such as number, mental thinking, fluency, problem solving and reasoning will be linked to the Australian Curriculum. The strategy can be used as a whole classroom activity, as an individual activity for differentiating the classroom and most important as an assessment strategy.  
Repeated as A18

E16 Maths Enrichment in Cambodia  
Workshop  
Isaac Nativ - VIC  
Years: 1 to 12
Teachers who volunteer to teach in 3rd world countries usually feel they are going to save the world, or at least the standards of mathematics in that part of the world. Actually, doing a ‘teaching round’ in remote schools in countries like Cambodia is the fastest, though not the easiest, way to become a better teacher. A better learner to be precise...
The presentation will include the personal experiences from the teaching period, in particular what you can do when most of your students don’t speak a word of English. We shall briefly go over the mathematical games and problems that seemed to work best. Useful tips and contact details will be given to teachers who might want to do same in the future.

Revised as A19

E17   Menu Maths and Other Models for Making Mathematicians  
Workshop  
Douglas Williams - Black Douglas Professional Education Services, VIC  
Café Conundrum offers curious questions, tantalising tasks, remarkable riddles, perplexing puzzles and enticing enigmas, but most of all it offers choice. An opportunity for students to choose - and own - their mathematics learning. It is one model teachers have developed to build classrooms in which students are learning to work like a mathematician. Explore this model through Menu Maths Packs from Mathematics Centre, be introduced to other models and follow up web support. This session will be particularly interesting to schools which already own Poly Plug.

Not repeated

E18   Exploring Games In Mathematics  
Workshop  
Years: 3 to 6  
Wong Oon Hua - Nanyang Technological University/National Institute of Education, Singapore  
Children are naturally interested in games as they depict a sense of fun while they are immersed in them. The experience of incorporating games in a school will be shared and how some of these selected games can be linked to mathematics will be discussed. Literature review on the impact of playing games and mathematics will also be shared.

Not repeated

E19   High Mathematical Performance on Class Tests is Not a Predictor of Problem-Solving Ability. Why?  
Lecture  
Dr Gaye Williams - Deakin University, VIC  
This session is designed to raise questions about why some students are willing to explore unfamiliar mathematical ideas and some are not. It provides opportunities to consider real life student cases, and make predictions about whether each student is likely to explore the unfamiliar challenging problems. Gaye then presents data on how each student responded during problem solving activity, and differences in responses are discussed. Participants identify what surprised them, and what happened as expected. The session culminates in a discussion about what we can do as teachers to increase the correlation between high test scores and problem solving capacity.

Revised as G20

E20   15 Top Tips to Re-Energise Your Teaching of Mathematics  
Lecture  
Greg Warmbrunn - Carey Baptist Grammar School, VIC  
In the cut and thrust of crowded timetables, extra-curricular activities, rambunctious students, demanding parents and the feeling you’re on your own in the teaching of mathematics, we all need to be re-encouraged, at times, with a tool set of skills and ideas that will assist in our daily teaching practice. This seminar is designed to equip, empower, energise, and re-inspire you to take on the challenges of each class so both you and your students look forward positively to the shared learning time together. All teachers are welcome, but particularly teachers starting out in their career are encouraged to attend.

Revised as H15

E21   Enhancing Spatial Visualisation in the Primary Classroom with Google SketchUp  
Computer Workshop  
Years: 5 to 7  
Dr Esther Loong - Deakin University, VIC  
Dr Sandra Herbert - Deakin University, VIC  
Google SketchUp is a free downloadable software from the Internet. It is easy to learn and is available for both PC and Mac platforms. In this hands-on workshop participants will learn how to use Google SketchUp to enhance spatial thinking and visualisation in primary school children. Relevant topics such as area, perimeter and surface area will be covered.

Note: Please bring your own laptop fully charged with Google SketchUp pre-downloaded before the session.

Not repeated
E22 Teaching Through Tessellations
Workshop
Dr Heather McMaster - Sydney University/Macquarie University, NSW
May McMaster - NSW
If you like to use a hands-on, investigative approach to teaching mathematics, students can do all the geometric reasoning required in the Australian Curriculum for Years 5-8 by making and investigating tessellations. Tessellations are polygons organised on a surface in a symmetrical way without leaving any gaps or overlaps. Tessellations can be created and analysed by students either digitally or through arranging cut-out shapes. They also provide a wonderful opportunity to link mathematics with art and enable creativity. In this hands-on workshop participants will be making and investigating tessellations as a small group activity.

Not repeated

E23 Using the Australasian Problem Solving Mathematical Olympiads to Enhance the Proficiency Strands
Workshop
Dr Anne Prescott - APSMO Inc
Jon Phegan - APSMO Inc
Commercial Presentation
This workshop introduces the APSMO Maths Olympiads Program and its benefits in terms of the proficiency strands of the Australian Curriculum. The Olympiads consist of a series of five contests aimed at increasing mathematical problem solving and reasoning skills and thereby enhances enjoyment and enthusiasm for mathematics. (APSMO Inc is a not-for-profit organisation.)

Note: Please bring writing materials - but calculators are not allowed!

Repeated as F23

E24 RANTS (and Raves!): Rich Algebra and Number Tasks
Workshop
Lorraine Day - University of Notre Dame, WA
Rich tasks, incorporating open-ended questions and investigations, can be used to expose students to alternative representations, reasoning and approaches to problem solving leading to deeper understanding. Students who are encouraged to look for patterns in their answers will discover rules and make meaning of them rather than trying to memorise rules that have no meaning for them. The Number and Algebra Strand of the Australian Mathematics Curriculum provides an opportunity for the development of rich tasks to link algebraic reasoning and arithmetical thinking to develop them simultaneously. The process of personalising, contextualising and adapting existing tasks to ensure they are rich, relevant and have the Mathematical Proficiencies embedded provides further opportunities. There are some great tasks and puzzles available that can be used as the catalyst for developing tasks that reflect your personality and interests and those of your students.

Repeated as H18

E25 Spook Numbers? Squimes? Invent Your Own Finite Set
Lecture
Bruce Henry - Australian Maths Trust, VIC
97364 is a squime. Its first digit is a prime or a square, the next two digits (97) make a prime or a square. The next two digits (73) make a prime or a square, the next two (36) do, as do 64. The last digit is a prime or a square. There are no zeros and no repeated digits. The set of squimes is clearly finite. This session will look at some finite sets like squimes and show how they can be used to produce different, interesting classroom activities.

Repeated as D23

E26 Engaging Students in Learning Mathematics by Asking More Challenging Questions
Lecture
Prof Peter Sullivan - Monash University, VIC
Alan Stubbs - McKinnon Secondary College, VIC
Alli Lehmann - McKinnon Secondary College, VIC
Owen Shepherd - McKinnon Secondary College, VIC
Brendan Hislop - McKinnon Secondary College, VIC
We have been working on a project in which we trial an approach to teaching based on asking more challenging mathematics questions. The idea is that more challenging questions not only motivate students to persist but also encourage them to connect ideas together, to consolidate prior learning, and to use prior knowledge to solve new problems. In this session we present examples of the types of tasks we have used, and describe both the difficulties and the successes of this approach.

Not repeated
E27 What is the Best Way to Teach Mathematics?
Workshop
Leigh Thompson - Retired (Bairnsdale Secondary College), VIC
Luke Blythman - Student (Victoria University), VIC

If there were a definitive answer to this question then possibly there would be no need for this conference! In teaching, what works for one teacher does not necessarily work for another, and, similarly with student learning. As it is not feasible to provide every student with an individualised program to match their learning styles with particular teaching styles, an overall varied approach may be best. Student interest in Mathematics can be gained, and furthermore sustained, by utilising this approach. The presenters believe their youth and maturity enable them to utilise their enthusiasm and experience to provide this variety.

Note: Please bring a USB flash drive or similar to obtain copies of resources (including movies). Scissors, glue and a drawing compass may be useful if you can bring them.

Repeated as F28

E28 Slater Bugs, Carrots and My Two Daughters
Workshop
Anthony Harradine - Potts-Baker Institute, Prince Alfred College, SA

Data can help us to make decisions about situations that involve chance. It turns out that for many of us this is a difficult thing to do and intuitions often leads us to wrong conclusions. Come and see how slater bugs and carrots can help us to understand how to check our intuitions. The activities you will see are suitable for students across a wide range of years and help student to develop a deep understand of how probability and statistics connect.

Note: Please bring along, if you can, a laptop computer (Windows or Mac). If you can’t, it will be OK.

Not repeated

E29 Analysing Students’ Result Through Box-Plot Using Excel for Middle to Later Years Mathematics
Computer Workshop
Iqbal Hossain - The Grange P-12 College, VIC
Rudy Birsa - Williamstown High, VIC

A Boxplot is a convenient way of graphically depicting numerical data. This is a very effective means of visually displaying single or multiple data sets. Differences between data are readily discernible using this method of representation. In this hands-on session, participant will use students’ results (i.e. sample data) to construct box plots using MS Excel software. A comparison between the plots will be made based on a statistical understanding of each individual plot. This is a very useful tool in assessing where students strengths or weaknesses lie. The session is suitable for teachers with beginner level MS Excel skills.

Note: Participants should bring a USB stick (a laptop is optional).

Repeated as D25

E30 Ratio: New Ideas for an Old Topic
Lecture
Robert Money - Rob Money Consulting, VIC

Understanding of ratio is central to ‘numeracy across the curriculum’. Mathematics teachers can lead the way in promoting approaches and applications that are both accessible and attention-grabbing - to students and to teachers in other curriculum areas. In this session we will look at the use of ratio tables as an approach to fixed-ratio problems and will discuss the potential for use of ratio tables more widely across the curriculum. Then we will compare algebraic and geometric modelling approaches to the solution of problems involving changing ratios. We will discuss the potential of categorization of problem types as a learning strategy.

Repeated as F30

E31 Achieving Better Results by Tailoring Mathematics to Individual Students’ Needs With Assess
Lecture
Sam Hopley - Oxford University Press, VIC

Commercial Presentation
The average mathematics classroom is home to a diverse range of student needs and abilities. The accessibility and flexibility of Assess allows teachers to scaffold and support while providing great opportunities for inquiry-based and student-lead learning. Students are more engaged and will achieve much better results when challenged at the appropriate level. This session will demonstrate a variety of uses of Assess in the classroom as a teaching and learning tool as well as a means to gauge the progress of individuals and the class as a whole.

Repeated as C33
E32 Getting Rid of the Textbook: Theoretical Basis and Practical Experience
Lecture

Lachlan Yeates - Warracknabeal Secondary College, VIC
Hayley Paproth - Warrnambool College, VIC

This presentation looks at how textbooks are traditionally used in secondary mathematics classes and discusses the experiences of two teachers from different schools who have moved away from textbook based instruction. Options that exist to replace roles currently filled by textbooks, especially in 1-to-1 classrooms, are examined along with some of the challenges of moving away from a traditional model. This presentation will be useful to teachers in schools that are moving towards 1-to-1 models as well as those who are interested in exploring alternative teaching methods.

Repeated as A34

E33 Solving Linear Equations
Workshop

Stephen Swift - Retired, QLD

The balance model of equation solution is brought to life to provide a powerful concrete model of equation solution. Students colour and cut up some paper to represent numbers and variables to develop facility in solving equations including those with variables and constants on both sides. Participants will use pre-made materials to allow time for their use. The model naturally links physical manipulation to mental processes and leads simply to the formal solution of linear equations. The system used in this workshop can also be used to model integer operations, expansion and factorisation.

Not repeated

E34 Middle School Mathematics: An Integrated Approach Using Manipulatives, MATHOMAT and Geometry Software
Workshop

John Lawton - Objective Learning Materials, VIC
Michael O'Connor - St Francis Xavier College, VIC

This workshop explores the integration that is possible between widely available classroom materials such as pattern blocks, the MATHOMAT template and THE GEOMETERS SKETCHPAD software. Participants will explore some of the mathematics in a series of lessons being published by OLM adapted to the Australian curriculum by Michael O’Connor from the original US series written by Henri Picottio. These lessons will support and enrich middle school mathematics classes of all ability levels. The integrated and creative use of a variety of popular resource materials demonstrated in this workshop provides excellent opportunities for discussion with students about subtle and important ideas.

Repeated as D30

E35 MathsWorld for the Australian Curriculum: Print and Digital Solutions for the Classroom
Lecture

Peter Saffin - Macmillan Education Australia, VIC

Commercial Presentation

When teaching maths outside of my area of expertise the book I was using had theory and exercises that got too hard, too quickly. I had too many students who needed help, and I had to reteach the theory or struggle on while students waited. This wasted time and was hard work! When developing MathsWorld, I made sure the books work in the classroom. Exercises are structured to allow students to achieve success, so that you have time to help those who really need it! Moving from understanding, to fluency, problem solving and reasoning. The essential package for non-maths specialists, new and experienced teachers. Participants receive two free MathsWorld texts.

Note: Bring your own laptop with internet connection if you have one.

Not repeated

E36 The Future is Here, It’s Just Not Widely Publicised
Workshop

Peter Fox - Elisabeth Murdoch College, VIC

New technologies provide amazing opportunities, but how many of these save time, make teaching easier or have a significant impact on student learning? TI-Nspire software provides a Question Application that makes writing digital questions easy and reduces marking time to seconds. With marking out of the way, teachers can use the diagnostic tools provided in the software to gain a greater insight to student understanding. Participants in this session will create and use digital assessment items using TI-Nspire.

Note: To gain the maximum benefit from this session, participants should bring their laptop. A free trial version of the TI-Nspire Navigator software can be collected from the Texas Instruments stand at the conference and should be loaded before attending the session.

Not repeated
E37  Teaching with the iPad
Lecture  Years: 7 to 12

Freda Goddard - Presbyterian Ladies College, VIC
Ian Taylor - Presbyterian Ladies College, VIC

Commercial Presentation
Doceri is the professional iPad interactive whiteboard and screencast recorder with built-in remote desktop control, from SP Controls. This session will showcase how we’ve used Doceri in the classroom and the powerful impact it has had on our lessons. Connect to Doceri Desktop to access, control and annotate over any file or program on your computer. You can create, edit, replay and perfect your hand-drawn lesson or annotated presentation before recording a screencast. ‘Doceri Remote’ is available free in the iTunes App store. Download a free trial of ‘Doceri Desktop’ at www.Doceri.com

Note: iPads are not required for this session.

Repeats as C45

E38  Effective Mathematics Learning and Technology: Both Sides of the Möbius Strip
Lecture  Years: 7 to 12

Marcel van Otterdyk - Strathmore Secondary College, VIC

The balanced and appropriate use of technology can stimulate interest, increase proficiency and support differentiated learning pathways for our students. This session will provide an introduction to how student notebooks and a range of applications and web based resources can be used to improve understanding and aid in the development of critical thinking skills. The web based resources to be covered will include Wikispaces and Google Apps. During the session, ways in which technology can be used to facilitate formative and summative assessments will also be considered.

Note: If possible, please bring your own notebook - fully charged and your own wireless internet access.

Not repeated

E39  Maths Meets Art - Projects Kids Will Want to Put on the Fridge
Workshop  Years: 7 to 12

Jennifer Palisse - Mater Christi College, VIC

Need some colourful tasks that really engage your students no matter what their ability? Then come along and explore activities that will have your students creating drawings they can use to discover mathematical concepts. Activities include exploring sequences and series and their limiting value through Pythagorean trees; practicing index notation and pattern recognition by generating the Sierpinski triangle; and discovering the effect of transformations through the use of technology and sunsets. Each activity is intended to be visually appealing so that students will want to learn more about the maths involved and can be easily modified to suit any Middle and Senior School class.

Note: A CAS calculator would be useful to bring but not necessary.

Not repeated

E40  MATHSPACE- Never Mark Homework Again. Seriously
Computer Workshop  Years: 7 to 12

Mohamad Jebara - Mathspace Pty Ltd, NSW

Commercial Presentation
Imagine if you didn’t have to worry about tediously marking homework - if marking could be done automatically, so you could focus on teaching. Imagine being able to snapshot each of your students’ strengths and weaknesses in a few seconds. Imagine an online maths tool that taught students how to set out their working. Mathspace is a structured and thorough math teaching and learning tool suite, not a simple multiple choice game. It allows students to input FULL working for algebra, geometric proofs and reasoning, and even allows students to easily draw probability trees and their own graphs, all on the one page.

Note: To get the most out of the session bring a laptop/iPad/tablet along with you.

Repeated as D35

E41  Reasoning - A Dog’s Tale
Lecture  Years: 8 to 12

Prof Derek Holton - University of Melbourne, VIC
Prof Kaye Stacey - University of Melbourne, VIC

We will consider the fundamentals of reasoning from a dog’s perspective. The basics established here will be made relevant to the Australian Curriculum and show by examples how reasoning develops in students.

Not repeated
E42  An Online Numeracy Assessment Tool for Youth and Adults
Lecture

Dave Tout - ACER, VIC
Jim Spithill - ACER, VIC

Commercial Presentation - although ACER is a not for profit company
The Core Skills Profile for Adults (CSPA) is a new ACER online assessment tool that is matched to the five levels of the latest Australian Core Skills Framework (ACSF). It targets young school leavers through to adults who are studying, working or returning to training and study, in the key skill areas of Reading, Writing and Numeracy. This presentation will look at the background to the development of the tool and specifically at the numeracy items and test systems that have been developed by ACER. The numeracy questions are set in a range of authentic contexts or domains relevant to adult learners with a focus on workplace and employment, education and training, and also personal and community contexts and applications. CSPA Numeracy reports provide diagnostic feedback on the learner’s performance in the focus areas of Problem solving, Number and Algebra, Measurement and Geometry, and Statistics and Probability.

Not repeated

E43  An Introduction to Markov Chains
Lecture

Prof Terry Mills - Loddon Mallee Integrated Cancer Service, VIC

Markov chains are models that use concepts from probability to describe how a system, such as the weather or the economy, changes from one state to another. The basic ideas were presented by a Russian mathematician A.A. Markov about 100 years ago. These days Markov chains arise in Year 12 mathematics in several States. However, many teachers will not have encountered these objects in their university studies. This presentation provides a gentle introduction to Markov chains. A notable feature is a list of applications that show how these models are useful in contemporary applied mathematics. This paper is joint work with K.C. Chan and C.T. Lenard (La Trobe University).

Repeated as A47

E44  A Smorgasbord of Univariate Data Analysis on the TI-Nspire
Workshop

Russell Brown - Educational Consultant, VIC
Rodney Anderson - Moreton Bay College, QLD

In this hands-on session both raw data and frequency tabulated data will be analysed. Some hints will be given to maximise the TI-Nspire’s functionality. It will cover box-plots (including parallel box-plots), histograms with techniques of aligning columns depending whether discrete or continuous data is used, pie charts, bar charts (including splitting of categories), relative frequency plots and cumulative frequency plots.

Note: Bring your own TI-Nspire or borrow one at the session.

Repeated as B46

E45  Using Mathematica to Tackle Mathematical Methods (CAS) Examination 2 Multiple Choice Questions
Computer Workshop

Dr David Leigh-Lancaster - Victorian Curriculum Assessment Authority (VCAA), VIC
Brian Hodgson - Education Consultant, VIC

Mathematica will be used as the enabling technology to tackle various multiple-choice questions from 2006-2011 Mathematical Methods (CAS) Examination 2 papers. A collection of summary Mathematica notebooks for revision purposes based on classification of question by area of study and topic will be presented and made available. The potential for use of similar notebooks for implementation of item response analysis will also be considered briefly. Previous use of Mathematica is not assumed, however participants should be familiar with using software in a Windows environment.

Note: Please bring a USB if you wish to save notebooks (Mathematica files) from this session.

Repeated as F42

E46  ClassPad Use, By an Experienced and a New Teacher, in the VCE
Lecture

Sue Garner - Ballarat Grammar, VIC
Fiona Greenway - Ballarat Grammar, VIC

Commercial Presentation
This session will look at how useful the Casio ClassPad is in the VCE. Examples and trends of typical use of the ClassPad will be given by an experienced VCE ClassPad user in Maths Methods (CAS) and Specialist Maths, but also by a teacher new to using the ClassPad in Maths Methods (CAS) and Further Maths. This session will suit those who have been using the ClassPad for a while, listening to the fine tuning of good techniques in VCE Maths. Newcomers to this particular technology will also find this session useful hearing a new teacher talk about learning
to use the ClassPad and helping students gain confidence with the technology in her first two years of teaching in Victoria.

*Note: Please bring your Casio ClassPad if you have one.*

**E47  TI-Nspire and Statistics**

**Lecture**

Prof Ming-Gong Lee - Chung Hua University, Taiwan

A TI-Nspire calculator is used to develop tools to be used in fundamental statistics in high school or college. The instruction content includes many types of plot in descriptive statistics; the Bayes’ theorem in posterior probability; interval estimates; and hypothesis testing, etc. Many examples with large data are usually implemented by computer software, but by using a handheld calculator instead, resources are saved for advanced study without waste. A study of using handheld calculator in a university of Taiwan will be given to demonstrate its effectiveness and usefulness for students in a fundamental statistics course.

**Note:** Bring your Casio ClassPad if you have one.

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**E48 Further Maths Examinations This Year: Where Was the CAS Calculator Useful?**

**Workshop**

Kevin McMenamin - The Peninsula School, VIC

This session will look specifically at questions from this year’s papers that were conducive to CAS calculator use. How much content should be pre-programmed into the calculator, what hints should be recorded in the bound reference and what calculator functionality should be memorised? Each of these questions will be explored and your hands-on experience will give you the opportunity to use the calculator just like the students. Time will also be given to identifying the questions that are time consuming in calculator use and would be better done ‘by hand’. The featured calculator will be the Casio ClassPad.

*Note: Bring along your own calculator. Some ClassPads will be available for loan. Not repeated*

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**SESSION F: 10:45am - 11:45am Friday 7th December**

**FK1 Developing Problem Solving: Moving From Conceptual Understanding and Fluency to Solve Mathematical Problems**

**Keynote**

George Booker - Author and Educational Consultant, QLD

This presentation will provide an overview to the thinking that is needed to build an ability to formulate, represent and solve mathematical problems. While conceptual understanding and fluency are necessary conditions for solving problems, they are not sufficient. An analysis of what the problem is asking, determining the information and mathematical processes that need to be brought to bear on the problem and adapting this understanding to form a means to a solution are also essential. Of particular importance is a connected view of mathematics as a whole so that ideas and techniques from across all mathematical domains can be brought to bear on the complex problems that will be met in everyday situations, as well as in further mathematics, and so enable students to become competent and confident users of mathematics.

George Booker has taught Mathematics Education at Griffith University for more than 30 years and is a regular presenter of Numeracy Professional Learning for organisations and schools across Australia. His publications include Building Numeracy: from diagnosis to intervention 2011 (including a series of numeracy screening tests), Teaching Primary Mathematics 2010, a resource book for teachers, the Booker Profiles in Mathematics, a series of diagnostic mathematics assessments, The Maths Game: using instructional games to teach mathematics as well as Win with Maths! CD-Roms for early years and middle years. A series of problem solving books and CD-Roms for teachers and their students Years 1-7+, co-authored by Denise Bond, were published in 2008 and 2009 by RIC publications.
FK2 Virtual Reality Excursions - Exploring the Altona Water Treatment Facility

Keynote Years: 5 to 10
Assoc Prof David Shallcross - University of Melbourne, VIC

In this Session we will explore the use of interactive and immersive learning environments to allow students to travel in the virtual world locations that they might never be able to otherwise. As an example we will use a virtual reality learning environment based around the City West Water Altona Water Treatment Facility built in 2010 and 2011. This facility processes sewage recycling the water for irrigation and industrial use. As well as exploring the site in the virtual environment we will also look at the design of the facility and the mathematics and engineering behind its design and operation.

David Shallcross is Director of the Engineering Learning Unit at the University of Melbourne. A chemical engineer by training, David has won national and international awards for his teaching and leadership in engineering education. David served on the MAV Council for 4 years and has been a regular contributor to Vinculum. His latest work is focussed on the development of interactive and immersive virtual reality learning environments that allow engineering students to explore locations not usually accessible to students.

F3 Empowering Teachers in New Ways

Lecture Years: K to 7
Alexander Young - Ingenious Technological Enterprises, TAS

This paper will introduce you to the concept of digital rubrics, a methodology that enables the teaching and assessment of deep learning. Readers will see how teachers can:

1. Improve their ‘assessment for learning’ through the innovative use of their school photocopier as a high speed scanner obtaining exceptionally powerful insights into their assessment of written responses and multiple choice assessment.
2. Measure ‘the effect size’ of their teaching.
3. Reduce their workload and at least double their students’ rate of learning.
4. Identify gaps in student learning not observable under conventional assessment.
5. Quantify question quality.

Repeated as A5

F4 Personalising Maths Learning Using iPads in the Early Years

Workshop Years: F to 2
Helen Edmonds - Concord School, VIC
Pam Wright - Concord School, VIC
Annemarie Holmyard - Concord School, VIC
Neschelle Castillo - Concord School, VIC

Teachers will participate in the Concord School experience by investigating multiple ways to personalise maths learning in the Early Years setting. The school has undertaken extensive action research to investigate the impact of iPads on student learning and pedagogy. Participants will be strongly facilitated in their professional learning and will leave the session with a wealth of ideas, resources and skills for using iPads effectively in their Early Years maths teaching.

Note: We will supply a pod of 10 iPads for the session - if participants have their own iPad please bring it along fully charged.

Repeated as A7

F5 Transforming the Way Students Understand Mathematics Using Manipulative Materials

Workshop Years: F to 3
Rachel Kennedy - Oxford University Press, VIC

Developing early number ideas is complex and is frequently underestimated. A multi-sensory approach to mathematics, using structured apparatus, supports students to build a strong concept image, leading to a deeper understanding of number ideas and number relationships. The Numicon Approach grew out of a classroom-based research project founded in the daily experience of intelligent children having real difficulty with mathematics. This interactive session will give direct experience of the Numicon materials and approach and will provide educators with the opportunity to reflect on their pedagogy, and support them in processing new and challenging ideas.

Repeated as A8
F6  Fluency Activities for Prep to Grade 6
Workshop  Years: F to 6
Lisa Stanford - Roxburgh Rise Primary School, VIC
Renee Italia - Roxburgh Rise Primary School, VIC
Melissa Brown - Roxburgh Rise Primary School, VIC
This will be a fun, hands-on session giving you lots of practical ideas to take back to your classroom. We will provide a hard copy of all ideas shared.
Learning intention:
◊ Share and experience fluency activities and their purpose.
◊ To increase your bank of fluency ideas (all dimensions of numeracy).
◊ Explore ways to differentiate fluency.
◊ Explore ways to use fluency for assessment.
Success Criteria:
◊ I will have completed activities and have a clear understanding of their purpose.
◊ I will have added to my bank of fluency ideas.
◊ I will differentiate fluency activities in my classroom.
◊ I will use fluency activities to assess in my classroom.
Repeated as H3

F7  Children’s Literature in the Primary Mathematics Classroom
Workshop  Years: F to 6
Dr Julie Clark - Flinders University, SA
This workshop will explore a range of children’s literature to support teaching mathematics in the Australian Curriculum (F-6). Participants will explore books such as The Greedy Triangle, Sir Cumference and the Knights of the Round Table and the Warlords series. Teachers will engage in some activities connected to the stories and discuss strategies to connect the books across the three mathematics content strands.
Repeated as E4

F8  Professional Development of Teachers Using Lesson Study: A Shared Journey
Lecture  Years: F to 9
Dr Wanty Widjaja - Deakin University, VIC
Assoc Prof Colleen Vale - Deakin University, VIC
There is growing worldwide interest in Japanese Lesson Study as a form of professional development, with large scale adaptations of Lesson Study taking place in many countries around the world. We recently had the opportunity to visit four primary and three secondary schools in Japan to observe Japanese Lesson Study and will share with you what we learned about Japanese Lesson Study and discuss the potential of adapting Japanese Lesson Study for professional learning and school improvement in Australian primary and secondary schools. We will describe the shared journey of professional learning of teachers in these Japanese schools and share the mathematics problems used in the research lessons observed and the “objectives for students learning. We will relate these objectives and teaching practices observed to the mathematical proficiencies in the Australian Curriculum: Mathematics.
Not repeated

F9  Teach Australian Curriculum Maths for Understanding - Primary
Lecture  Years: F to 6
Dr Ian Lowe - The Mathematical Association of Victoria, VIC
One challenge to teaching maths is drawing together all the available resources around the structure of the Australian Curriculum. Ian has made this available in “Teach Maths for Understanding”, free to MAV members on <www.mav.vic.edu.au>. Thousands of hyperlinks include Hands-on, ICT, Teaching and Whole-class investigations for all topics at all levels catering for many learning styles. Another challenge is planning for differentiation. Teach Maths for understanding has organised the material into Differentiated Unit Plans. For most classes TM4U makes resources for six Australian Curriculum levels accessible.
Not repeated

F10  Probability and Statistics in The Australian Curriculum
Workshop  Years: F to 6
Laurel Smith - Thomas Chirnside Primary, VIC
This session has a focus on the implementation of the Probability and Statistics strand of the Australian Curriculum. It will look at a range of tasks that can be fun and engaging for students while also being able to be used as assessment tasks.
Repeated as E9
Differentiating Instruction: Place Value Concepts, P-6

Workshop

Anita Chin - Anita Chin Mathematics Consultancy, NSW

Children's images of numbers and the development of place value understanding begins in the early years with counting and part-part-whole ideas and progresses to partitioning numbers in standard and non-standard forms. However, many students use inefficient strategies or rote-learnt procedures for computation and struggle with the concept of ten-ness. This hands-on workshop will provide practical ideas for differentiating both the concept being taught as well as the concrete materials being used. Participants will experience parallel tasks to meet the full range of all students' needs and abilities at different developmental levels whilst addressing the same big idea. Black line masters provided.

Repeated as E5

Place Value and Estimation

Lecture

Rob Proffitt-White - Principal Education Advisor-ACARA, QLD

This session takes the audience through the development of place value through the different proficiency strands. It looks at tried and tested activities that schools have been adopting in the last 6 months to gauge students' procedural and conceptual knowledge of place value from the Early Years into the lower Secondary Schools. Rob will share some results and teacher ideas from small research projects that he has developed in schools throughout the last 12 months.

Not repeated

What's NEW @ Cambridge HOTmaths

Workshop

Sharon London - Cambridge HOTmaths, NSW
Victoria Cook - Cambridge University Press, VIC

Commercial Presentation

Are you looking for online and print resources for your F to 10 and 10A programs? Or text and online resources for lower ability students in Years 7-10? Would you like curriculum-specific IWB resources to support your classroom teaching? At this workshop you will be discover all the new things happening at Cambridge HOTmaths: the new F-2 content, the Games Library, the new Test Generator, the Task Manager for class and homework use, the new online Professional Learning program.

Repeated as G12

A Lesson Study Approach to Professional Learning

Lecture

Rob Park - Park Education Consultancy, VIC
Patricia McNamee - Copperfield College, VIC

Research has shown that the most effective professional learning involves teachers working together, sharing ideas and discussing observed lessons and student work. Facilitated by the Network Numeracy Coach, many teachers of secondary maths in the Keilor/St Albans Network have been involved in Lesson Study professional learning over the past year. This session outlines the approach taken, the benefits gained and the lessons learnt from the process. There will also be an opportunity to discuss the experience with some of the participants.

Repeated as B10

Mathematics Education - Military or Democratic? You Can’t Have Both

Lecture

Dr Jude Ocean - RMIT University, VIC

In this session I argue that traditional Australian mathematics education is military in style. I describe ‘military’ aspects such as silence, competitiveness, obedience, acceptance of hierarchy, the ‘drill and practice’ routine of many textbooks, and the use of language and teaching strategies that reflect a military agenda. Military systems are, by definition, not democratic systems; in fact they are the antithesis. This raises a perhaps unrecognised problem for teachers, who may inadvertently be working against democratic values when they teach mathematics in a traditional way. Examples will also be given of mathematics education initiatives that promote a democratic agenda.

Repeated as E13

Superannuation - Ignorance May Be Bliss, But Also Expensive

Lecture

Rob Vermay - VIC

Financial literacy is a mandatory component in the national curriculum but this topic is likely to be directly relevant to your own personal circumstances. This session attempts to demystify superannuation and help you to understand how it involves you, why you need it and the fundamentals of how it all works. We will discuss choices, access to
superannuation funds, taxation, pre- and after-tax contributions and limits, opportunities and potentially expensive traps - all governed by some important and relevant regulations. This is a repeat of a popular option in 2011 with attention to new regulations effective from 1 July 2012 and may also provide substantial background for your teaching. The presenter is a mathematics teacher and not a licensed financial advisor. The only advice offered is that your best investment is likely to be in educating yourself.

**Not repeated**

**F17  Mathletics “Assessment and Reporting”**

*Computer Workshop*  
*Years: F to 12*

*Andrew Nicholls - 3P Learning, NSW*  
*Lauren Anderson - 3P Learning, NSW*

*Commercial Presentation*  
This course is all about how to use results obtained within Mathletics to drive student learning in schools. It steps teachers through the process of using Mathletics for formative assessment, identifying areas of strength and weakness by looking at individual student data in Results Manager. Teachers are shown how to respond to this form of assessment by creating subsets (groups) within their class to extend or consolidate the knowledge of the different ability groups. Teachers are shown how to modify course curriculum content in order to design individual or group programs of study for students who need greater degrees of differentiation.

**Repeated as D13**

**F18  Using Maths Tasks and Mixed Groups to Improve Mathematical Proficiency in the Primary Years**  
*Workshop*  
*Years: 2 to 6*

*Sue O’Connell - Catholic Education Office, VIC*  
*Sue Wilson - DEECD, Eastern Region, VIC*

Linking the proficiencies of the Australian Curriculum to a range of mathematical tasks, we demonstrate how we promote engagement, enjoyment and understanding for both primary students and teachers.

**Repeated as G17**

**F19  Engineering ‘aha’ Moments in Number**

*Workshop*  
*Years: 3 to 7*

*Douglas Williams - Black Douglas Professional Education Services, VIC*

Calculating changes across the school when you stop thinking of something like $8 + 7$ as an instruction to calculate and start thinking of it as an opportunity to investigate. Then the answer isn’t 15; it’s the variety of ways we can convince someone the answer is 15. This workshop offers an opportunity to experience such activities, consider the teaching craft involved and learn about web support from Calculating Changes. It will focus on Years 3-7 and is partner to the session Working Mathematically with Infants which focuses on Years K-2. You are welcome to either or both.

**Not repeated**

**F20  Mathematics Investigations in Primary Mathematics**

*Workshop*  
*Years: 4 to 7*

*Dr Phong Lee Koay - National Institute of Education, Singapore*  
*Dr Lu Pien Cheng - National Institute of Education, Singapore*

Mathematical problem solving is at the centre of the framework of the mathematics curriculum in Singapore, and mathematical problems include non-routine, open-ended investigations and real-world problems. There are primary school mathematics teachers who are unfamiliar with the investigative processes in mathematics, and have seldom attempted to integrate mathematics investigation into their teaching. In this session we will share some investigation tasks and ideas on the integration of investigations in primary mathematics classrooms.

**Repeated as C25**

**F21  The MoneySmart Project. Financial Numeracy: The Australian Curriculum Approach**

*Lecture*  
*Years: 4 to 10*

*Shane O’Connor – Victorian Curriculum Assessment Authority (VCAA)*

Implementing the Australian Curriculum is currently a major priority for all schools. At the same time, in this period of post-global financial crisis uncertainty, consumer and financial numeracy has also been identified as a major priority for all students. The Australian Securities and Investment Commission (ASIC) and the VCAA are leading the MoneySmart Schools Project to support schools address these two priorities. Numeracy units of work covering Years 4-10 have been developed with a financial numeracy focus. They are all aligned to the Australian Curriculum. This session will present these units of work for discussion and demonstration.

**Repeated as G23**
The TPACK Model Within a Mathematics Education Context

Dr Ahmad Samarji - Victoria University, VIC

The Technological, Pedagogical and Content Knowledge (TPACK) model is an emerging one which adds technology as a lens and context to the Pedagogical and Content Knowledge (PCK) model. The TPACK model reflects the need that teaching and learning should be viewed, conceptualised, and re-conceptualised from a “21st Century Digital Lens”. Technology is no longer an ad-hoc visitor that teachers can invite or exclude. Technology is integrated in students’ and teachers’ lives from A-Z. Hence, there are no excuses for it not being integrated across the teaching and learning of all disciplines, including mathematics. This presentation shows examples of three mathematics lessons (primary, early secondary, and VCE) underpinned by the TPACK model in a manner which actively engages students and promotes mathematics teaching and learning.

Repeated as A24

Using the Australasian Problem Solving Mathematical Olympiads to Enhance the Proficiency Strands

Dr Anne Prescott - APSMO Inc
Jon Phegan - APSMO Inc

This workshop introduces the APSMO Maths Olympiads Program and its benefits in terms of the proficiency strands of the Australian Curriculum. The Olympiads consist of a series of five contests aimed at increasing mathematical problem solving and reasoning skills and thereby enhances enjoyment and enthusiasm for mathematics. (APSMO Inc is a not-for-profit organisation.)

Note: Please bring writing materials - but calculators are not allowed!

Repeated as E23

Measurement and Technology - Using Data Loggers

Bronwyn Quint - Museum Victoria - Scienceworks, VIC
Daniel Avano - Museum Victoria - Scienceworks, VIC

Data loggers have been used in science classrooms for some time now, but can they be used in the maths classroom as well? Using data loggers, ‘real’ data can easily be collected by students using sensors. Graphs and tables can be shown to have relevance to ‘real’ events, not just numbers copied out of a book. Using data loggers to collect the data used for analysis, changes in variables can be tracked showing the resulting changes in graph shapes and data trends. Combining collected data with a program such as Excel students can easily produce tables and graphs for analysis. This presentation will include a brief overview of other Museum Victoria Maths resources.

Repeated as G24

Bringing Maths Problems to Life on the Computer Screen

Steven Francis - Avila College, VIC
Ziad Baroudi - Avila College, VIC
Presenting with Year 7 Students - Nicola Maugeri, Grace Ang, Emma Spencer

BYOB (Build Your Own Blocks) is a computer program designed to empower high school students to solve interesting problems through computer programming. This hands-on workshop, run by two teachers together with Year 7 students, will show you how it can be used to solve Maths problems like testing large numbers for primality, generating Fibonacci numbers and finding the Highest Common Factor of two numbers using Euclid’s algorithm. You will leave this session with new skills and a set of problems to use in class. BYOB was developed as an extension to Scratch at the University of California, Berkely, with high school students in mind. It is free to download and works on Windows, Mac and Linux platforms.

Repeated as G25

Strategies for Problem Solving

Assoc Prof Susie Groves - Deakin University, VIC

While Problem Solving is identified as one of the four Proficiency strands in the Australian Curriculum, there is little evidence of the type of problem solving included in the Working Mathematically dimension of VELS. This workshop focuses on ways in which teachers can develop their students’ sense of mathematical inquiry through mathematical activities that focus on problem solving skills and strategies.

Not repeated
F27  Encouraging Disengaged Learners to Re-engage with Maths: Investigations with the EMPower Series
Workshop
John Lawton - Objective Learning Materials, VIC
Richard Korbosky - Edith Cowan University/Mathematical Association of WA, WA
Commercial Presentation
In this workshop participants will engage with some of the hands-on investigations into mathematics from the EMPower metric series published by Objective Learning Materials. Adapted to the Australian context from the original US series, the EMPower metric program focuses on building understanding through contextualised lessons that engage all students in a classroom. Performance understanding is required of students as they work collaboratively to draw important foundation concepts in numeracy out of real world settings. This new series provides teachers of non traditional numeracy and mathematics courses with a comprehensive set of well produced student investigations, supported with extensive teacher guidance.
Not repeated

F28  What is the Best Way to Teach Mathematics?
Workshop
Leigh Thompson - Retired (Bairnsdale Secondary College), VIC
Luke Blythman - Student (Victoria University), VIC
If there were a definitive answer to this question then possibly there would be no need for this conference! In teaching, what works for one teacher does not necessarily work for another, and, similarly with student learning. As it is not feasible to provide every student with an individualised program to match their learning styles with particular teaching styles, an overall varied approach may be best. Student interest in Mathematics can be gained, and furthermore sustained, by utilising this approach. The presenters believe their youth and maturity enable them to utilise their enthusiasm and experience to provide this variety.
Note: Please bring a USB flash drive or similar to obtain copies of resources (including movies). Scissors, glue and a drawing compass may be useful if you can bring them.
Repeated as E27

F29  Operations with Integers
Workshop
Stephen Swift - Retired, QLD
The traditional method of teaching integer operations using number lines does not lead to rapid internalization and mental strategies. The system used in this workshop gives students a concrete model of integer operations that leads on naturally to concrete models of basic algebra. Students colour and cut up some paper to represent integers to develop facility in addition, subtraction, multiplication and division operations. Participants will use pre-made materials to allow time for their use. The models naturally link physical manipulation to mental processes. This is part of a general method for modelling operations with integers and performing basic algebra operations.
Not repeated

F30  Ratio: New Ideas for an Old Topic
Lecture
Robert Money - Rob Money Consulting, VIC
Understanding of ratio is central to 'numeracy across the curriculum'. Mathematics teachers can lead the way in promoting approaches and applications that are both accessible and attention-grabbing - to students and to teachers in other curriculum areas. In this session we will look at the use of ratio tables as an approach to fixed-ratio problems and will discuss the potential for use of ratio tables more widely across the curriculum. Then we will compare algebraic and geometric modelling approaches to the solution of problems involving changing ratios. We will discuss the potential of categorization of problem types as a learning strategy.
Repeated as E30

F31  Action Research and Its Impact on Student Outcomes
Lecture
Michelle Moses - Elisabeth Murdoch College, VIC
Action research in the mathematics classroom can help teachers develop an understanding of which approaches are effective to improve student-learning outcomes. At Elisabeth Murdoch College an action research project was conducted in fraction multiplication to determine whether using the area model was an effective representation to improve students learning outcomes. Does using mathematical representations, engaging in discussion and drawing on students' informal knowledge make a difference in their learning outcomes? How effective are students in retaining their mathematical knowledge? This session will focus on results, statistical analysis as well as student worked examples to determine the effectiveness of the area model in teaching fraction multiplication.
Repeated as A35
F32 GeoGebra Resources for the Australian Curriculum
Computer Workshop
Tobias Cooper - De La Salle Revesby NW, NSW
Commercial Presentation
In this workshop I will showcase a selection of 40 GeoGebra files designed for the new Australian Curriculum. These Year 7-10 resources will be in the Nelson Think Maths series of textbooks. The GeoGebra files are designed to be simple and effective teaching tools and are high quality resources-some of which took me hours to make.

Not repeated

F33 Pearson Assess
Lecture
Evan Curnow - Pearson, VIC
Dirk Strasser - Pearson, VIC
Commercial Presentation
Pearson Assess takes online maths assessment to the next level. Teachers have the ability to easily create and assign differentiated tests and homework revision, with all questions automatically marked. Students can also use Pearson Assess as a tool for revision. See how Pearson Assess works with an interactive demonstration of this product.

Repeated as B35

F34 Creating Interactive Learning Documents
Workshop
Peter Fox - Elisabeth Murdoch College, VIC
“The brain processes visual information 60,000 times faster than text.” * Static diagrams drawn on a white board are not as effective as dynamic, interactive documents that help generate understanding through powerful visuals. Participants in this workshop will see how to create interactive documents using TI-Nspire. Examples include dynamic domain restriction of functions and their corresponding inverse (Methods/Specialist), simulating loans (General/Further) and angle properties in cyclic quadrilaterals (General).

Note: A TI-Nspire handheld will be provided for the session; however participants are welcome to bring their laptop to use TI-Nspire software.

Not repeated

F35 Using SOLO Taxonomy in the Mathematics Classroom
Lecture
Mitchell Howard - Lincoln High School, New Zealand
SOLO taxonomy is a way of structuring thinking. In New Zealand high schools, SOLO is used as the framework for national assessments in senior mathematics. At Lincoln High School SOLO taxonomy has been adopted throughout the school as a common language of learning. The mathematics department uses SOLO taxonomy for planning units of work, differentiating and structuring of open ended tasks, scaffolding thinking, and providing both feedback and feed-forward. The intent of this session is to give a big picture of what SOLO taxonomy is and provide some practical examples of how it can be used in mathematics classrooms.

Repeated as A40

F36 eduSTAR
Lecture
Leanne Compton - DEECD, VIC
Russell Blackie - DEECD, VIC
This session will provide an overview of the software that is available to secondary government school teachers that could be used in the mathematics classroom. In particular, the session will provide an overview of Microsoft Math, Geogeebra, Yenka, InspireData and Mathematica.

Note: Participants can bring their own laptops with eduSTAR if they wish to explore software during session (but not essential).

Repeated as G34

F37 You Sunk My Space Ship!
Computer Workshop
Hayden McQueenie - Victoria University, VIC
Chris Ly - Point Cook Senior, VIC
Battleship is an engaging and fun way for students to learn Directed Number concepts and skills, but is restrictive in the sense that only single co-ordinates are dealt with at any one time. In this workshop, we will use Geometer’s Sketchpad to play an extended version of Battleship, which involves controlling the trajectories of powerful lasers, and discuss how through playing this game, students can gain an understanding of Linear graphs. We will also discuss how to extend the game further to cover more advanced concepts. Prior knowledge of Geometer’s
Sketchpad will not be necessary.

**Repeated as H29**

**F38 Creating an Online Moodle Course for Your Mathematics Class**

**Computer Workshop**

*Mehmet Altundal - Isik College, VIC*

This session is for teachers who are thinking of creating an online course for their maths classes. In this hands-on computer workshop we will create a free course for each participant with moodle at www.vcemaths.com. Participants will have the opportunity to explore the features of their brand new online course.

- How to enrol your students to the course.
- How to share documents with your students.
- How to announce marks.
- How to create and manage assignments for your students.
- How to create a homework forum.

*Not repeated*

**F39 Mathematica™: Pandora’s Box or Classroom Empowerment II? Curriculum Development with Mathematica™**

**Lecture**

*Dr Brenton Groves - Independent Researcher, VIC*

Wolfram offers economic ways for teachers and students to acquire a copy. Details in the presentation. Learning to program Mathematica™ is identical to becoming fluent in a foreign language; one must learn the vocabulary and grammar. Mathematica™ has an advantage in that each ‘word’ has one meaning and the grammar is extremely flexible. WolframAlpha produces Mathematica™ syntax from ordinary English requests. This presentation will contain a number of simple interactive demonstrations of programming, the Modify process, and slide show generation. It will be available on the web so teachers can investigate the material at their own pace afterwards.

*Repeated as H34*

**F40 Intro to Mathematica**

**Computer Workshop**

*Craig Blake - Mount Erin College, VIC*

This session will introduce participants to using Mathematica as a teaching, learning and computational tool when teaching Further Mathematics and Mathematical Methods. It is assumed that participants will be beginners to using Mathematica.

*Repeated as B47*

**F41 Colourful Conics on the TI-Nspire CAS**

**Workshop**

*Raymond Rozen - RMIT, VIC*

*Shirly Griffith - Jacaranda (Wiley), VIC*

**Commercial Presentation**

In this hands-on session participants will have the opportunity to engage with a number of mathematical activities which use the TI-Nspire CAS calculator with Operating System v3.2. Investigations include some of the new features of Version 3.2 and other activities, including creating a locus of points for ellipses and hyperbolae. These activities are suitable for the TI-Nspire CAS ClickPad and TouchPad and Teacher Software. Previous experience with using the TI-Nspire is not essential.

*Note: Calculators will be provided but you may bring a TI-Nspire handheld, or laptop with the TI-Nspire software v3.2 installed.*

*Repeated as D45*

**F42 Using Mathematica to Tackle Mathematical Methods (CAS) Examination 2 Multiple Choice Questions**

**Computer Workshop**

*Dr David Leigh-Lancaster – Victorian Curriculum Assessment Authority (VCAA), VIC*

*Brian Hodgson - Education Consultant, VIC*

Mathematica will be used as the enabling technology to tackle various multiple-choice questions from 2006-2011 Mathematical Methods (CAS) Examination 2 papers. A collection of summary Mathematica notebooks for revision purposes based on classification of question by area of study and topic will be presented and made available. The potential for use of similar notebooks for implementation of item response analysis will also be considered briefly. Previous use of Mathematica is not assumed, however participants should be familiar with using software in a Windows environment.

*Note: Please bring a USB if you wish to save notebooks (Mathematica files) from this session.*

*Repeated as E45*
F43  ClassPad Use, By an Experienced and a New Teacher, in the VCE
Lecture
Sue Garner - Ballarat Grammar, VIC
Fiona Greenway - Ballarat Grammar, VIC

Years: 10 to 12

Commercial Presentation
This session will look at how useful the Casio ClassPad is in the VCE. Examples and trends of typical use of the ClassPad will be given by an experienced VCE ClassPad user in Maths Methods (CAS) and Specialist Maths, but also by a teacher new to using the ClassPad in Maths Methods (CAS) and Further Maths. This session will suit those who have been using the ClassPad for a while, listening to the fine tuning of good techniques in VCE Maths. Newcomers to this particular technology will also find this session useful seeing a new teacher talk about learning to use the ClassPad and helping students gain confidence with the technology in her first two years of teaching in Victoria.

Note: Please bring your Casio ClassPad if you have one.
Repeated as E46

F44  An Ocean of Opportunity: Exposing Students to Real Applications of Mathematics
Lecture
Dr Vikram Garaniya - Australian Maritime College (UTAS), TAS

Years: 10 to 12

What is the point of doing this? With a major reduction in the number of students studying pre-tertiary maths, we attempt to motivate and inspire students to continue with their maths studies. We apply the mathematics which students are currently learning in Australian Years 10, 11 and 12 to real-life engineering applications, with examples of integral calculus, differential equations, trigonometry and data analysis.

Note: Participants should bring a graphics calculator and pen. We will bring workbooks to hand out.
Not repeated

F45  Kissing in the Mathematics Classroom Using the TI-Nspire CAS!
Workshop
Russell Brown - Educational Consultant, VIC
Rodney Anderson - Moreton Bay College, QLD

Unfortunately the term “kissing” in a mathematical context conjures up circles just teaching each other! In this session we will investigate the relationship between exponential and logarithmic functions together with calculus concepts, to solve, in exact terms, where the general parent functions actually kiss each other. Used as an assessment task this problem ties together many concepts expected at this level using both graphical and algebraic techniques.

Note: Bring your own TI-Nspire or borrow one at the session.
Repeated as A49

F46  An Amazing Theorem
Lecture
John Kermond - John Monash Science School, VIC

Years: 11 to 12

Marden’s theorem is an amazing theorem that links the roots of a complex cubic polynomial and the roots of its derivatives with several geometrical properties of triangles and ellipses. In this session the theorem is presented and discussed in detail using several examples. The examples provide interesting material that could be used for the VCE Specialist Mathematics Unit 3 Analysis Task.

Repeated as B49

F47  Further Mathematics and the National Curriculum
Lecture
Prof Peter Jones - Swinburne University, VIC

Years: 11 to 12

By December 2012, the content of the Australian Senior Mathematics Curriculum will be finalised. The new curriculum will comprise four subjects, one of which, General Mathematics, will replace the current VCE subject Further Mathematics. This presentation will examine the content and the achievement standards of this new subject with the aim of helping teachers prepare for teaching General Mathematics when the National Curriculum is implemented at the VCE level.

Not repeated
SESSION F-G: 10:45am – 1:10pm Friday 7th December

F-G1  Teach Maths with Games Using Mangahigh.com
Computer Workshop  Years: 2 to 10
Mohit Midha - Mangahigh.com, VIC

Commercial Presentation
Mangahigh.com is the first curriculum compliant digital-games-based maths resource designed to be used by schools. It inspires incredible enthusiasm amongst students, while offering unique insights to teachers on students’ ability and effort. The recent launch of m-sensei, a virtual tutor, creates an individualised learning program for each student - personalising their learning, identifying gaps in their skills and recommending activities to address these gaps. Mangahigh, wildly popular in the UK and US, is now available to schools across Australia, offering the Australian Curriculum. Join us for this presentation and receive your FREE 30day trial.

Repeated as C-D2

F-G2  Take Real Data Into Your Classroom Using CensusAtSchool (Australian Bureau of Statistics)
Computer Workshop  Years: 5 to 10
Mary-Anne Aram - Australian Bureau of Statistics, VIC

Looking for different ways to use and teach statistics in the classroom? In this session teachers will get the opportunity to familiarise themselves with the Australian Bureau of Statistics (ABS) Education Services’ free website focusing on CensusAtSchool including new material. We will look at the teacher registration process and the 2012 Questionnaire. You will see how to access CensusAtSchool and Education Services resources, activities and marking rubrics, which are aligned with the Australian Curriculum; as well as datasets and interactive graphs. You get a bumper goodie bag, but be prepared for a fast moving website tour!

Repeated as A-B1

F-G3  Motivating Students & Transforming Teaching with the Classroom Organiser Software
Computer Workshop  Years: 6 to 12
Bill Murray - Mentone Girls Secondary College, VIC
Victoria Pichler - Full Circle Education, VIC

Commercial Presentation
Leading teachers in several top Melbourne schools are now using the Classroom Organiser to help prepare lesson and student plans, and to track and report individual students’ progress. Differentiated programmes are easily introduced and students are motivated through being involved in developing their own learning programme. The system encourages teachers to plan ahead and review work in a timely and organised manner, while achieving valuable time savings. Easy tracking and reporting closes the loop for administrators and parents. A variety of sample plans in several subjects are now freely available, as is a 90-day free trial.

Repeated as A-B2

F-G4  The Big Maths Ideas in 14 Poems
Lecture  Years: 7 to 12
Helen Prochazka - MTXM Movies, TAS
Maurice Murphy - MTXM Movies, NSW
Adrian Jacobson - MTXM Movies, TAS

Maths is more than measurement and number calculations
More than geometry, statistics and algebra manipulations
So we set out to elucidate its beauty, heart and history
Its concepts, connections and contexts - and do all of this with poetry!
For the economy of a rhyme, has significant potential
To communicate, with feeling, what in maths is quintessential
We hope that our content-rich verses, many teachers will soon find
Are a way to link some big ideas, to a mathematics student's mind!

Repeated as A-B3

F-G5  Lua for Everyone: Getting Started with TI-Nspire Scripting
Workshop  Years: 7 to 12
Dr Stephen Arnold - Compass Learning Technologies, NSW

TI-Nspire now supports Lua, a full scripting language that makes possible almost anything you can imagine. Many of the wonderful interactive documents and simulations for mathematics and science are now being created in Lua. Come along to this hands-on workshop and see what all the fuss is about. By the end of the session you will be creating your own simple documents in Lua, and have all the tools to go further if you choose. Lua is not just for programmers and some wonderful things are possible if you have the time and inclination! Bring a laptop or handheld with the latest version of TI-Nspire, or use a supplied handheld.

Not repeated
F-G6  Just Mathematics  
**Workshop**

*Anthony Harradine - Potts-Baker Institute, Prince Alfred College, SA*

Why are you a mathematics teacher? Because you love mathematics? How much time do you currently spend ‘really’ doing mathematics? As much as you would like? Spend this session really doing mathematics. No knowledge of content outside the school curriculum required. The aim? To enjoy yourself and not think about your students. However, I promise what you learn is useable with your students if you wish. [Content is based on work done by the “Mathematics Research Group” (MRG) at Prince Alfred College during 2012. The MRG consists of teachers, mathematicians and statisticians really doing mathematics.]

**Note:** Please bring whatever you would normally use to do mathematics.

*Not repeated*

F-G7  Using TI-Nspire CAS Navigator to Transform a Good Lesson Into a Great Lesson: Revisiting the Surd Spiral  
**Workshop**

*Roger Wander - University of Melbourne MGSE, VIC*

Experienced teachers will know particular lessons they've taught in the past which have really hit the mark. No matter when they were first developed, these good lessons can be improved through judicious use of interactive mathematics technology. The presenter will show how a lesson/investigation based on surds and geometry (seen at the 2009 MAV December Conference) can be enhanced for increased student engagement and understanding using the interactive features of TI-Nspire CAS CX Navigator hardware and software. Participants will use the handheld calculator (provided) to pose questions and offer solutions within the ‘lesson’ environment, and will discuss how they might adapt their current lessons in a similar manner. Lesson materials will be made available in both printed and electronic form.

*Repeated as A-B5*

F-G8  Further Maths SACs - Design and Assessment  
**Workshop**

*Andrew Stewart - Presbyterian Ladies’ College, VIC*

*Fiona Latrobe - Ballarat Grammar School, VIC*

Two experienced FM teachers will discuss a number of alternatives in grading/assessing SACs. SAC designs for the Core and a number of SAC types for the Modules will be presented, and participants will be encouraged to share their experiences.

*Repeated as C-D6*

**SESSION G: 12:10pm – 1:10pm Friday 7th December**

GK1  Teaching Statistics to Connect  
**Keynote**

*Prof Helen MacGillivray - Queensland University Technology/International Statistical Institute (ISI), QLD*

Because Statistics is about problem-solving in contexts involving uncertainty and variation, it requires conceptual understanding, with interpretations dependent on assumptions and context, but always striving for objectivity, justification and evidence-based analysis, avoiding susceptibility to context ‘intuitions’. As variation and uncertainty are omnipresent in life and all disciplines, it is particularly important that the development of the statistical ‘story’ is coherent and purposeful, connected with everyday experiences and real data, linking with other disciplines and students’ futures, and with Data and Chance in partnership and harmony with each other. The past two decades have seen considerable discussion, research and developments across all levels of education to meet the challenges of facilitating the learning of statistical thinking and reasoning. As well as incorporating advances and providing coherent progress that meets the needs of all students, capturing the essentials of Statistics (both Chance and Data) in curricula writings and in support materials has its own difficulties. This presentation discusses ways of facilitating connected learning in data investigation, and in real-context probability that brings together data and modelling. It refers to experiences over many years at the local, national and international levels to help you make the Australian curriculum work for you and your students.

Helen is a Vice-President of the International Statistical Institute (ISI), and past-President of the International Association for Statistical Education, the Statistical Society of Australia and the Australian Mathematical Sciences Council. She has received many grants and awards for teaching and was one of the first Australian Learning and Teaching Senior Fellows. She has published widely, including textbooks, book chapters and more than 80...
Helen has played key roles in mathematics and statistics school education with the Queensland Studies Authority, the Australian national curriculum and the Australian Mathematical Sciences Institute’s TIMES project. She has chaired reviews of university departments and centres, and worked in the UK on secondment and as a consultant on teaching Statistics.

GK2 MathCityMap - The Outdoor Math Project
Keynote
Prof Dr Matthias Ludwig - Goethe-University, Hessen, Germany

In public generally, but also in schools more and more projects which use GPS-based technology have set up during the last years. In the MathCityMap-project in Frankfurt/Germany students experience mathematics at real places and in real situations within out-of-school activities, with the help of GPS-enabled smartphones and special math problems. In this presentation I will explain the MathCityMap-project and its technical implementation as well as various opportunities to work with the project in terms of learning mathematics with the help of the latest technology. I also hope to show you first empirical results how students from middle school dealt with these outdoor math problems.

Matthias Ludwig is Full Professor in Mathematics Education at Goethe-University Frankfurt, Germany where he teaches mainly secondary education students. His research in math education is about mathematical modelling, doing Outdoor mathematics with technology and spatial geometry. He is the leader of the Geometry Group of the German Society of mathematics education. His publications include Math and Sport (A mathematical View on the Olympic Games), Proceedings of the Geometry Group of the German society of Mathematics education and several conferences. He is also editor of a series of mathematical text books for secondary students, called Math. Logo.

G3 Engaging Young Children in the ‘BIG IDEAS’ in Mathematics Workshop
Years: K to 3
Eva deVries - Australian Catholic University, QLD
Prof Elizabeth Warren - Australian Catholic University, QLD

This hands-on session shares proven research based learning activities that assist young children from low SES and Indigenous backgrounds to effectively engage in the ‘big ideas’ in mathematics. The activities are very visual, and incorporate different modes of learning and the various mathematical representations. During this presentation we will also model how to differentiate these activities so as to cater for a diverse range of students (both in terms of their abilities and learning styles). The activities are clearly linked to the Australian mathematical curriculum and attend to ‘good’ mathematical pedagogies. These ‘take away’ activities are ready for classroom implementation. Not Repeated

G4 Engaging Students Through Differentiated, Web-based Learning Computer Workshop
Years: K to 12
Alan Power - MyMaths Pty Ltd

MyMaths is a superior, web-based, interactive T&L resource covering each curriculum Year K-12. Lessons merge teaching and learning to enable teachers to develop a mentoring style and to engage students in a differentiated, interpersonal way. The MyMaths Assessment Manager is a powerful support platform for the T&L resources which enables continuous assessment of each student’s learning performance and provides all the information necessary to optimise learning profiles for as long as the students are at the school. Hands-on workshops will focus more on the Assessment Manager. Repeated as D4

G5 Developing Flexible Thinkers in the F-3 Mathematics Classroom Workshop
Years: F to 3
Richard Korbosky - Maths Association of WA, WA

The ability to think flexibly in mathematics is an important skill to acquire from the start of the mathematics journey. Young students should be given the opportunity to manipulate materials, draw the mathematics sentences. There are many graphic organisers which assist and organise their thinking. This session explores a variety of strategies and will arm the participants to return to the classroom with new ideas about flexible thinking. Repeated as B4
G6  Fluency Activities to Consolidate Number Learning  
Workshop  
Hayley Hoy - Koroit and District Primary, VIC  
Rachael Lenehan - Koroit and District Primary, VIC  
Years: F to 6  

This is a hands-on workshop that gives classroom teachers daily activities that will promote fluency in mathematics. Developing mathematical fluency is best done little and often rather than in less, frequent, longer blocks of time. We will share our experiences with tracking student improvement and retention of concepts and strategies as well as those tried and tested high quality experiences.

Repeate as D8

G7  Primary Maths Specialists at Upwey South Primary School  
Lecture  
Julie Hall - Upwey South Primary School, VIC  
Gary Monopoli - Upwey South Primary School, VIC  
Years: F to 6  

Primary Maths Specialist is a Federal Government Program. Hear about the program and how we used this opportunity to improve our numeracy results at Upwey South Primary School. We began with our documents and worked with teachers to introduce differentiation in classes. We have made great progress and would like to share with you our journey, including where to next.

Repeate as C9

G8  Lesson Study at Creekside P-9 College  
Lecture  
Assoc Prof Susie Groves - Deakin University, VIC  
David Garner - Creekside P-9 College, VIC  
Chris Karageorge - Creekside P-9 College, VIC  
Caraline Stone - Creekside P-9 College  
Years: F to 6  

There is growing worldwide interest in Japanese Lesson Study as a form of professional development, with large scale adaptations of Lesson Study taking place in many countries around the world. This presentation will describe a Lesson Study project being carried out in three Victorian schools in 2012. It will illustrate the typical Japanese structured-problem-solving research lessons that form the basis for Lesson Study, and discuss how such research lessons are planned, the role of the teacher, as well as identify issues relating to the adaptation in Australia of Lesson Study as a means of professional development.

Not repeated

G9  Nelson Maths - 100% Coverage of the APPROVED Australian Curriculum  
Lecture  
Pauline Rogers - VIC  
Commercial Presentation  
Join our author team as they explain the series written specifically to assist teachers in the implementation of the APPROVED Australian Curriculum, and showcase the components and features of Nelson Maths: Australian Curriculum. The session will cover how we explicitly link the components to the F-10 Mathematics Curriculum Strands, Content Descriptions and Codes; the importance of basing Nelson Maths on the final and approved F-10 Mathematics Curriculum; the detailed assessment component within the Student Book and how it specifically links to the Australian Curriculum; how the series caters for a range of learning styles and the mixed ability class; how the Teacher Resources will continue to support the whole class-small group-whole class approach and provide teachers with an array of hands-on and investigative tasks; how the assessment components (including mid- and end-of-year tests) which align with the Achievement Standards from the Australian Curriculum; explain the new bridging book: Nelson Maths 6+ Extension Tasks; new ICT/IWB resources. All schools represented at the workshop will be given a complimentary Nelson Maths: Australian Curriculum Student Book, sample units from the teacher resources and handouts.

Repeate as E10

G10  Speaking the Maths Language!  
Workshop  
Greg Thomas - Pearson, VIC  
Commercial Presentation  
Using a scaffold approach to learning, participants will explore the language within a unit of work from enVisionMATHS and explore how language becomes a vital tool in a teacher’s bag of tricks. Through this workshop, participants will be taught how to audit language and develop a whole school shared language approach to mathematics.

◊ To workshop the language demands in a unit of work from topic planner to single lesson plan.
◊ To unpack the key language required to assist children at difficult stages of mathematical growth.
◊ To identify elements of language within problem solving tasks.
To explore and develop templates for mathematical planning which includes modelled language. enVisionMATHS is a complete classroom program for teaching Primary Mathematics aligned to the Australian Curriculum.

Not repeated

G11 Nurturing the Maths Learner from Concrete to Abstract - Laughing all the Way
Workshop
Rod Cameron - Metung Primary School, VIC

Commercial Presentation
The developmental continuum from fully concrete/manipulative, through fully representational and partially representational, to abstract/algebraic is a clear pathway, and all of your students are somewhere along it. This workshop aims at building the capacity of teacher content knowledge and pedagogical content knowledge through the simple introduction of new learning materials designed to allow the deliberate and strategic movement of learners from concrete (metric pattern blocks), through fully representational (1:1 templates of the metric pattern blocks) to partially representational (different scales) to abstract (creating and using rules with no visual representation). Active fun for all, with free resources and online support. The author has developed these materials while working with NESB communities in Papua New Guinea, and as such, this is a commercial presentation.

Repeated as B8

G12 What’s NEW @ Cambridge HOTmaths
Workshop
Sharon London - Cambridge HOTmaths, NSW
Victoria Cook - Cambridge University Press, VIC

Commercial Presentation
Are you looking for online and print resources for your F to 10 and 10A programs? Or text and online resources for lower ability students in Years 7-10? Would you like curriculum-specific IWB resources to support your classroom teaching? At this workshop you will be discover all the new things happening at Cambridge HOTmaths: the new F-2 content, the Games Library, the new Test Generator, the Task Manager for class and homework use, the new online Professional Learning program.

Repeated as F13

G13 Not MySchool! Reporting Large-Scale Assessments to Benefit Students
Lecture
Dr Brian Doig - Deakin University, VIC

This session will argue for a better way to report national (and international) assessment results in order to assist teachers in planning effective educational experiences for their students. This is achievable at little extra cost to the Education systems, so why are we not doing it? An example using TIMSS results will be used to demonstrate what is possible with some ingenuity but not much cost.

Not repeated

G14 Mathletics ‘Integrating the Resources’
Computer Workshop
Lauren Anderson - 3P Learning, NSW
Andrew Nicholls - 3P Learning, NSW

Commercial Presentation
This course is designed to illustrate different methods for incorporating Mathletics into your learning unit and daily lesson plans. Utilising the different resources available within the program such as Teacher Toolkit and Concept Search, teachers are shown how to introduce new concepts in a collaborative forum for discussion and review. Teachers are taught how to develop lesson plans for units of work using a carousel approach, carefully integrating Mathletics in rotation between online, practical and paper-based activities. The course also briefly revisits the Results area of the program, illustrating how to focus students around new concepts for class work or homework revision.

Repeated as C14

G15 Consolidating Basic Number Facts Through the Use of Card Games
Workshop
Linda Baron - Education By Design, VIC

How often do you find children struggle to learn basic number facts or lack fluency and speed in their application because they are disengaged, ‘embarrassed’ to use concrete materials or find it boring? In this session come prepared to have some fun! Together we will explore some simple card games to promote fluency, speed and interest in learning basic number facts. We will also discuss how teacher observations and classroom conversations can assist children to reflect on their learning.

Repeated as H11
G16  Struggles with Regrouping
Workshop  Years: 2 to 5
Tierney Kennedy - Consultant, QLD

Many students really struggle with the concept of regrouping in both addition and subtraction. This workshop explores simple activities for building deep understanding of regrouping and relative size.
Not repeated

G17  Using Maths Tasks and Mixed Groups to Improve Mathematical Proficiency in the Primary Years
Workshop  Years: 2 to 6
Sue O’Connell - Catholic Education Office, VIC
Sue Wilson - DEECD, Eastern Region, VIC

Linking the proficiencies of the Australian Curriculum to a range of mathematical tasks, we demonstrate how we promote engagement, enjoyment and understanding for both primary students and teachers.
Repeated as F18

G18  Fractions in a Fraction of the Time
Workshop  Years: 2 to 8
Douglas Williams - Black Douglas Professional Education Services, VIC

Fractions seem to be one of the major points at which students ‘fall over’ in their mathematics learning. If you have the feeling that what has been done in the past... and usually done again the next year... and the next... simply hasn’t worked for many students in this topic, this workshop will help you discover alternatives. Explore different ideas, activities and structures which have helped other teachers make learning fractions a successful experience. Fractions, decimals and percentages will all be involved in this practical, hands-on, problem solving session that is supported by software.
Not repeated

G19  Using Excel to Create Statistical Displays
Computer Workshop  Years: 3 to 10
Jean Arnott - Australian Bureau of Statistics, VIC

The ability to create statistical displays with and without digital technologies is expected in the Australian curriculum from Year 3 upwards. Students who efficiently use technology to create graphs are equipped to undertake rich statistical investigations. In this hands-on session participants will learn how to construct frequency tables using the countif function and then use these to construct bar charts and histograms, pie graphs, picture graphs and dot plots. A tool for drawing box plots will also be shown. Authentic data will from the CensusAtSchool questionnaire be used. The session is suitable for teachers with beginner level Excel skills.
Repeated as H14

G20  High Mathematical Performance on Class Tests is Not a Predictor of Problem-Solving Ability. Why?
Lecture  Years: 4 to 8
Dr Gaye Williams - Deakin University, VIC

This session is designed to raise questions about why some students are willing to explore unfamiliar mathematical ideas and some are not. It provides opportunities to consider real life student cases, and make predictions about whether each student is likely to explore the unfamiliar challenging problems. Gaye then presents data on how each student responded during problem solving activity, and differences in responses are discussed. Participants identify what surprised them, and what happened as expected. The session culminates in a discussion about what we can do as teachers to increase the correlation between high test scores and problem solving capacity.
Repeated as E19

G21  Bridging the Gap
Workshop  Years: 4 to 8
Tanya Smith - Pearson, VIC
Sophie Matta - Pearson, VIC

In this workshop participants will be involved in breaking ‘tricky’ mathematical concepts into three levels of ability and adapting hands-on activities aimed at scaffolding weaker or less confident students to a higher level of understanding. This session will show how questions and investigations can be adapted to engage more students and encourage individuals to develop their own set of learning strategies. Teaching strategies outlined in the workshop will also show ways that we, as educators, can support the transition from primary to secondary mathematics in a mixed ability classroom. Participants will leave with ready-to-go maths activities, and new ideas for teaching mathematics.
Repeated as C27
G22 Using Whole Numbers and Number Lines to Develop Fraction Concepts
Workshop	 Years: 4 to 9
Catherine Pearn - University of Melbourne, VIC
Dr Max Stephens - University of Melbourne, VIC

This presentation focuses on students’ use and understanding of number lines in two main ways. First, it examines how students represent fractions on a number line, particularly the strategies they employ when placing simple fractions on a number line, without necessarily measuring, but relying on making sensible subdivisions ‘by eye’. A second focus is on how number lines, initially involving whole numbers and their fractional parts, can be used to develop fractional language and to articulate fractional concepts that can subsequently be applied to fractions themselves.

Repeated as D18

G23 The MoneySmart Project. Financial Numeracy: The Australian Curriculum Approach
Lecture	 Years: 4 to 10
Shane O’Connor – Victorian Curriculum Assessment Authority (VCAA)

Implementing the Australian Curriculum is currently a major priority for all schools. At the same time, in this period of post-global financial crisis uncertainty, consumer and financial numeracy has also been identified as a major priority for all students. The Australian Securities and Investment Commission (ASIC) and the VCAA are leading the MoneySmart Schools Project to support schools address these two priorities. Numeracy units of work covering Years 4-10 have been developed with a financial numeracy focus. They are all aligned to the Australian Curriculum. This session will present these units of work for discussion and demonstration.

Repeated as F21

G24 Measurement and Technology - Using Data Loggers
Workshop	 Years: 5 to 8
Bronwyn Quint - Museum Victoria - Scienceworks, VIC
Daniel Avano - Museum Victoria - Scienceworks, VIC

Data loggers have been used in science classrooms for some time now, but can they be used in the maths classroom as well? Using data loggers, ‘real’ data can easily be collected by students using sensors. Graphs and tables can be shown to have relevance to ‘real’ events, not just numbers copied out of a book. Using data loggers to collect the data used for analysis, changes in variables can be tracked showing the resulting changes in graph shapes and data trends. Combining collected data with a program such as Excel students can easily produce tables and graphs for analysis. This presentation will include a brief overview of other Museum Victoria Maths resources.

Repeated as F24

G25 Bringing Maths Problems to Life on the Computer Screen
Computer Workshop	 Years: 5 to 9
Steven Francis - Avila College, VIC
Ziad Baroudi - Avila College, VIC
Presenting with Year 7 Students - Nicola Maugeri, Grace Ang, Emma Spencer

BYOB (Build Your Own Blocks) is a computer program designed to empower high school students to solve interesting problems through computer programming. This hands-on workshop, run by two teachers together with Year 7 students, will show you how it can be used to solve Maths problems like testing large numbers for primality, generating Fibonacci numbers and finding the Highest Common Factor of two numbers using Euclid’s algorithm. You will leave this session with new skills and a set of problems to use in class. BYOB was developed as an extension to Scratch at the University of California, Berkely, with high school students in mind. It is free to download and works on Windows, Mac and Linux platforms.

Repeated as F25

G26 The Joy of Informatics
Lecture	 Years: 6 to 12
Jan Honnens - Christ Church Grammar School, WA

Informatics is the mathematics related to computer programming and includes popular topics such as networks, logic and algorithms. In this session we will go through some of the past questions from the Australian Informatics Competition and appreciate the relevance and elegance of this kind of mathematics.

Note: It will be beneficial to attempt the 30 sample question at www.amt.edu.au/aicsample.html before the session.

Not repeated
G27  CAS in Years 7 and 8: What! Why and How
Lecture  
Sue Garner - Ballarat Grammar/Cengage Learning, VIC
Commercial Presentation
This session will consider how Computer Algebra Systems (CAS) could be used by teachers in Years 7 and 8 Mathematics Classrooms. Even for teachers who are wary of this type of calculator’s use for students this young, there are ways that this tool can enhance learning by showing patterns in number, graphs and elementary algebra. Teachers will be guided through some of the activities in the Teacher Editions from Nelson Think Maths for Year 7 and 8.

Note: Bring your CAS calculator.
Repeated as C31

G28  Developing Students’ Relational Understandings of Mathematics
Workshop  
Dr Heather McMaster - Sydney University/Macquarie University, NSW
May McMaster - NSW
The questions that students find most difficult are those that don’t quite fit any of the formulae or procedures they have practised and memorised. Students who have a relational understanding of the mathematics involved can successfully answer these questions. These students don’t just know the rules. They also understand how the rules came about and they can connect them to other understandings. In this presentation you will learn about and discuss some teaching approaches that promote the development of relational understandings in the early years of high school.

Not repeated

G29  The Evolution of the Turtle from LOGO to Lego Mindstorms Robots
Lecture  
Nathaniel Bradshaw - Caroline Chisholm Catholic College, VIC
This presentation will explore the history of the LOGO programming language and its uses in the maths classroom then look at practical activities involving Lego Mindstorms Robots for students in Middle Secondary.
Repeated as H25

G30  Using Mathematica in the Classroom - By Teachers for Teachers
Lecture  
Karen Reid - Broadford Secondary College, VIC
Carmen Popescu-Rose - Loreto Mandeville Hall, VIC
Mathematica is a computational software which we, as teachers, have discovered to be a very powerful teaching and learning tool. It helps demonstrate concepts, create supporting course materials, assessment tasks, and presentations, and engages students in interactive learning, exploring and developing an understanding of mathematical concepts. It can be used from basic computations to very complex operations. Bring your laptop and begin to explore and use some of the functionality of Mathematica for the classroom. Teachers from government schools have access to Mathematica as part of the EduStar package. Teachers who do not have a Mathematica licence can download a free trial version from Wolfram Research.

Note: Bring your own laptop, fully charged, with eduStar image or Mathematica downloaded. (Free 30 day trials usually available).
Repeated as C36

G31  assessON - Assign, Monitor and Track Student Progress with ease
Computer Workshop  
Shirley Sharpley - Jacaranda (Wiley), VIC
Emmanuel Azali - Jacaranda (Wiley), VIC
Commercial Presentation
Are your students doing their Maths homework? Are they getting it right? Exactly what do they understand and where do they need more help? This session will unveil assessON, a powerful, effective online tool for Mathematics that answers all these questions. It assesses students’ readiness FOR learning, their progress AS they learn and their levels OF learning. Facts are that teachers armed with this information are much better placed to undertake targeted intervention with their students. Learn how this tool can be seamlessly integrated into your classroom and how it dovetails into the new Jacaranda Maths Quest 7-10A Australian Curriculum series.

Note: Participants will each receive a free access code to an assessON title of their choice.
Repeated as H28
G32 Oranges or Lemons - CAS in the 7-10 Curriculum
Workshop

Gael McLeod - Pearson, VIC
Antje Leigh-Lancaster - Pearson, VIC

Commercial Presentation

How could CAS enrich the 7-10 curriculum? How could it be used to improve mathematical understanding? This session is aimed at 7-10 Mathematics teachers who are unfamiliar with CAS. Explore how the new Australian Curriculum Pearson Mathematics series has integrated CAS technology and discover that CAS is an exciting teaching tool - oranges dipped in chocolate. Both TI-Nspire and Casio ClassPad calculators will be available, however you are welcome to bring your own.

Repeated as D31

G33 From Paper to Screen: Computer-Based Assessment of Mathematics - Lessons from PISA
Lecture

Dave Tout - ACER, VIC
Jim Spithill - ACER, VIC

Computer-based assessment of mathematics (CBAM) items were used for the first time in PISA 2012. They provided the potential to expand the capacities for mathematical literacy assessment, relative to paper-based items. This presentation will describe the benefits, and challenges, of developing computer-based assessment of mathematics for PISA, and describe the framework that the presenters developed for categorising the different types of computer interactivity used. Examples of the capacity and spread of the type of items will be presented and discussed, based both on the publicly-released PISA CBAM items and the knowledge about all the items that were used in the 2011 field trial and then in the final main study across the world in 2012. It is interesting to note that some critics asserted that there is 'no maths' in some items, but we argue that the relegation of computational matters to automatic calculation allows us to get at the higher-order thinking that is the key to effective mathematical literacy assessments.

Not repeated

G34 eduSTAR
Lecture

Leanne Compton - DEECD, VIC
Russell Blackie - DEECD, VIC

This session will provide an overview of the software that is available to secondary government school teachers that could be used in the mathematics classroom. In particular, the session will provide an overview of Microsoft Math, Geogebra, Yenka, InspireData and Mathematica.

Note: Participants can bring their own laptops with eduSTAR if they wish to explore software during session (but not essential).

Repeated as F36

G35 What’s an English Teacher Doing in a Mathematics Classroom?
Lecture

Dr Ray Williams - St Mark’s Anglican Community School, WA

This session will outline the exciting consequences of seriously integrating Mathematics and English by a teacher from each discipline as part of bigger pedagogical project. Key areas of the English Curriculum of Picture Books, Poetry Analysis and Satirical Story were explored in the mathematics classroom providing unexpected and eye-opening results for both teachers involved.

Note: Laptops not essential, but participants encouraged to bring them.

Repeated as H30

G36 FX Draw Q&A
Lecture

Paul Hooper - Efofex Software, WA

Commercial Presentation

A session of hints, tips, how to’s, questions and answers for FX Draw. This session is suitable for both new users of FX Draw and gurus.

Repeated as A41
G37  Deepen Your Students Understanding of Data: Using TINKERPLOTS Dynamic Data Exploration Software
Workshop  Years: 7 to 12
John Lawton - Objective Learning Materials, VIC
Dr Ian Lowe – The Mathematical Association of Victoria, VIC
Statistics is important to the Australian Curriculum. This workshop explores how the constructivist program TINKERPLOTS can be used across the curriculum. Using the data sets recently created by UTAS to exploit TINKERPLOTS, schools can give their students “the ability to create their own plots and tell their own story”. This is because the open ended structure of the program avoids “requiring students to decide beforehand on a graphical form created by the software”. Recent classroom experience of schools that have adopted TINKERPLOTS will be discussed along with the enormous potential that it has for developing deeper understanding by using data.
Repeated as B40

G38  An Overview of Mathematica for the 7-12 Classroom
Lecture  Years: 7 to 12
Craig Bauling - Wolfram Research, USA
This overview session will guide us through the capabilities of Mathematica and how it can be directly applied in teaching AusVELS curriculum in Years 7-12. Topics of this talk include:
- Using Natural English Language to quickly engage students without learning long keystroke sequences. (http://www.wolfram.com/broadcast/screeencasts/free-form-input/)
- Creating interactive models that encourage student participation.
- On-demand Chemical, Biological, Economic, Finance and Social data that brings real world data into your classroom.
- 2D and 3D information visualization for visual learners.
- Practical examples within AusVELS curriculum.
This is a great opportunity for those not experienced with Mathematica to get informed and excited.
Not repeated

G39  From Geoboard to CAS Calculator
Lecture  Years: 8 to 12
Michael Chapman - St Mark’s Anglican Community School, WA
This session investigates “Pick’s Rule” for finding area using the latest version of the TI-Nspire OS. Either by inspection or by using some clever programming help, participants can work through data capture, graphing and simple algebra to arrive at a neat little proof of the theorem. (No programming skills required!)
Repeated as A44

G40  Nspired Parabolas
Workshop  Years: 8 to 12
Rama Ramakrishnan - Bullsbrook District (K-12) High School, WA
The New National Curriculum requires conceptual conics teaching with more rigour and this session provides the tools for teaching parabolas for understanding. In the process the Texas Instrument’s “Navigator system” is used along with the TI-Nspire machine. ClassPad users will also benefit from the process presented but will have no demonstration. Nspire machines will be provided.
Not repeated

G41  Empowering Teachers in New Ways
Lecture  Years: 8 to 12
Alexander Young - Ingenious Technological Enterprises, TAS
Commercial Presentation
This paper will introduce you to the concept of digital rubrics, a methodology that enables the teaching and assessment of deep learning. Readers will see how teachers can:
1. Improve their ‘assessment for learning’ through the innovative use of their school photocopier as a high speed scanner obtaining exceptionally powerful insights into their assessment of written responses and multiple choice assessment.
2. Measure ‘the effect size’ of their teaching.
3. Reduce their workload and at least double their students’ rate of learning.
4. Identify gaps in student learning not observable under conventional assessment.
5. Quantify question quality.
Repeated as B42
G42  How Helpful Was the CAS Calculator in this Year's 2nd Methods Exam?  
Workshop  
Kevin McMenamin - The Peninsula School, VIC  
Savvy use of the CAS calculator in past Methods 2 examination questions has shown it to be advantageous and worth the time and effort of getting to know its workings. Generally at least half of the multiple choice questions and many parts of the extended answer questions benefit from good calculator skills. This hands-on session will get you using the calculator to see just how helpful (or not) it was with this year's questions. The most efficient methods will be presented and questions where the calculator should be avoided will be pointed out. Although the Casio ClassPad will be the featured CAS, the content is readily transferrable for TI-Nspire users.  
Note: Bring along your own calculator. Some ClassPads will be available for loan.  
Repeated as C50

G43  Hands-On in the Upper School with ClassPad eActivities  
Workshop  
Charlie Watson - The Tuition Centre, WA  
The incredible flexibility and diverse applications of eActivities is often overlooked by many ClassPad users. This workshop is a hands-on session for upper school teachers to see what's possible and then develop their skills in using and creating eActivities to pass on to their students. Participants are assumed to have a reasonable working knowledge of ClassPad to keep up with the hands-on activities, but if you don't, just come along, sit back and let the ideas fire up your enthusiasm. Bring your own Classpad where possible to load free copies of example eActivities onto it.  
Note: There will also be ClassPad's to borrow.  
Repeated as D46

G44  The Shoemaker's Knife  
Lecture  
Hussein Tahir - VIC  
The Shoemaker's Knife (Arbelos) is the region enclosed by three semicircles on the same diameter. This geometric characteristic has amazing properties, some of which were first pointed out by Archimedes. Over the years, more mathematicians have investigated the Arbelos and added to its many interesting features. Do yourself a favour - find out about the mysterious properties of the Shoemaker's Knife and take it into your classroom and fascinate your students!  
Repeated as D48

G45  Cubics and Tangents  
Workshop  
Shane Dempsey - Baimbridge College, VIC  
Peta Taylor - Baimbridge College, VIC  
This hands-on session will use the TI-Nspire CAS handheld to investigate tangents to a cubic function and their relationship with the roots of the function. This is a task that many senior maths teachers will be familiar with and the TI-Nspire CAS allows investigation of the general case to be explored thoroughly.  
Repeated as H41

G46  Graphs and Functions Transformations - Where Students Get Confused  
Lecture  
Yuriy Verkhatsky - Carwatha College, VIC  
Graphs and functions transformation is one of the most confusing topics for the students. Usually students do not have problems with the single transformation, except dilation from y-axis (especially for circular functions) and applying of modulus. But when it comes to the combinations of the transformations it becomes different story, especially if changing of the order of transformations change the final result (like reflection in x-axis and vertical translation or dilation from y-axis and horizontal translation). Also students are often confused with application of the matrices to transformations. This presentation aims to underline common student's mistakes in this area and how to avoid them.  
Not repeated

G47  SACs for Years 11 and 12  
Lecture  
Steve Morris - Jacaranda (Wiley), VIC  
Commercial Presentation  
Do you want to get a head start on preparation for next year's VCE classes? Do you want fully editable School Assessed Coursework tasks that come with fully worked solutions? Do you want Application tasks that have depth as well as breath and Analysis tasks that are comprehensive? In this session, you will be provided with some samples of Jacaranda’s new SACs for VCE Mathematics. You will have the chance to go through some SACs with
an experienced and practising teacher who can provide lots of useful hints and tips.

Note: Participants will receive customisable SACs to a VCE Mathematics subject of choice.

Repeated as H43

SESSION H: 2:10pm - 3:10pm Friday 7th December

HK1 Warm Up and Share Time - How To Make These Productive Learning Events

Keynote

Assoc Prof Colleen Vale - Deakin University, VIC

For some time now teachers have been encouraged to follow the whole-small-whole or whole-individual-whole structure for lessons. Typically in the first whole class segment of the lesson teachers model mathematics and launch the task(s) for the middle segment of the lesson. In some schools teachers also include ‘warm up’ activities in this whole class focus of the lesson. The final segment of the lesson is for whole-class sharing. In this keynote I will suggest how these whole class segments can be productive for learning by enabling students to learn from each other, as they express their ideas and explain and justify solutions to problems. I will illustrate ‘number talks’ and ‘orchestrated discussions’ drawing on my experiences of these practices observed in schools in USA, Japan and Australia where I’ve been involved in two projects, one on reasoning and the other on problem solving.

Colleen Vale is an Associate Professor in Mathematics Education at Deakin University. Until earlier this year she was an Associate Professor in Education at Victoria University. She is a former President of the MAV and regular presenter at MAV conferences and presenter for DEECD mathematics professional learning programs. She is co-author of the award winning book Teaching Secondary School Mathematics: Research and Practice for the 21st Century and is well known for her professional learning programs with out-of-field junior secondary mathematics teachers, research and projects with teachers on the use of technology and for her interest and work in the field of social justice in mathematics education.

H2 There’s More Than One Way to Flip a Shape

Lecture

Dan Jazby - Wales Street Primary, VIC

When conducting a lesson study into students’ development of spatial-visual reasoning, I uncovered a commonly held teacher belief which negatively impacts on student learning; the belief that spatial-visual reasoning has to be spatial-visual. Using a comprehensive review of the research literature on the development of spatial-visual reasoning, results from the lesson study and two case studies of exceptional students, this presentation argues that logical deduction is an overlooked yet essential element of spatial-visual reasoning. The presentation also provides a summary of the key concepts students need to develop in geometry in primary school.

Repeated as E6

H3 Fluency Activities for Prep to Grade 6

Workshop

Lisa Stanford - Roxburgh Rise Primary School, VIC
Renee Italia - Roxburgh Rise Primary School, VIC
Melissa Brown - Roxburgh Rise Primary School, VIC

This will be a fun, hands-on session giving you lots of practical ideas to take back to your classroom. We will provide a hard copy of all ideas shared.

Learning intention:
- Share and experience fluency activities and their purpose.
- To increase your bank of fluency ideas (all dimensions of numeracy).
- Explore ways to differentiate fluency.
- Explore ways to use fluency for assessment.

Success Criteria:
- I will have completed activities and have a clear understanding of their purpose.
- I will have added to my bank of fluency ideas.
- I will differentiate fluency activities in my classroom.
- I will use fluency activities to assess in my classroom.

Repeated as F6
H4 Differentiation Can Make a Difference!
Workshop Years: F to 6
Greg Thomas - Pearson, VIC

Commercial Presentation
Participants will unpack assessment samples for best practice in maths and explore the mathematical demands within tasks. Teachers will workshop using the planning tables contained in enVisionMATHS:

◊ To unpack the mathematical demands required to complete an assessment task.
◊ To investigate and implement rich assessment tasks for differentiation.
◊ To explore the use of rubrics in moderating tasks.
◊ To develop a lesson using differentiation from data collected.

enVisionMATHS is a complete classroom program for teaching Primary Mathematics aligned to the Australian Curriculum.

Not repeated

H5 Helping Kids to Actually Get Place Value
Workshop Years: F to 7
Tierney Kennedy - Consultant, QLD

A range of activities for building deep understanding of place-value and trusting the count in R-7 classrooms using problem-based teaching.

Not repeated

H6 Structuring Lessons to Maximise Student Engagement in Learning
Lecture Years: F to 9
Prof Peter Sullivan - Monash University, VIC
Sarah Stewart - Holy Saviour Primary School, VIC

The session will describe a lesson structure that was developed to maximise student engagement and to cater for the needs of all learners. A lesson following this structure was professionally videotaped, and the session will describe the lesson structure and present what the lesson looked like in the classroom. The structure is applicable for many mathematics lessons.

Not repeated

H7 Multiplication, Meaning & Times Tables
Workshop Years: F to 10
Douglas Williams - Black Douglas Professional Education Services, VIC

This workshop is a multiplication journey that begins with children first arranging objects in equal rows - an array model - and takes us through to the visualisation of abstract algebraic formulas. It explores activities which use concrete objects, semi-concrete representation such as graph paper and virtual representation through software, to simultaneously develop meaning in multiplication and facility with times tables. Although there will be activities for you to 'use tomorrow', the session will also stimulate thought about planning the multiplication journey through the school so that more students are more successful at multiplication matters.

Not repeated

H8 Training Teachers in Tanzania
Lecture Years: F to 12
Jenny Clark - Baimbridge College Hamilton, VIC

Volunteering overseas in a developing nation can be a wonderful experience both personally and professionally. I had a 12 month placement as a teacher trainer in the Kagera Region of Tanzania in 2010/11. While there I worked with teachers, education administrators, teacher training college lecturers and students to improve the teaching and learning of mathematics. Teachers are desperate for in-service training in participatory teaching methods and creation of teaching aids - you could help them! This session is to give anyone interested in volunteering a taste of what a positive and satisfying experience it can be.

Repeated as B11

H9 Mathletics ‘Where to Start and Course Selection’
Computer Workshop Years: F to 12
Claire O’Connor - 3P Learning, NSW
Julie Thompson - 3P Learning, NSW

Commercial Presentation
This course is designed as an introduction to teachers new to using Mathletics. Its aim is to ensure teachers are able to confidently navigate their way around the Student Centre and the Teacher Centre. Teachers are shown how these two areas of the program can be used to complement contemporary mathematical teaching methods supporting engagement, mathematical exploration, concept clarification, collaborative learning and performance assessment. Further, teachers are shown how to align the programs course content to state based learning outcomes and specific teaching plans.

Repeated as A14
H10  Preserving the Past and Passing on the Best - Publishing for Mathematics Teachers
Lecture
Bill Healy - Kilbaha Multimedia Publishing, VIC
Commercial Presentation
During a career in the classroom a mathematics teacher creates thousands of pages of resources for students. Sadly, much of this work in both printed and electronic format is lost when mathematics teachers resign or retire from teaching. Kilbaha Multimedia Publishing has started a commercial project to preserve and distribute the best resources created by today’s classroom teachers. On a dedicated website http://top100schoolresources.com.au, teachers will offer their resources for sale to schools. Would your favourite mathematics lesson make the top 100? Come along to see how it will work and perhaps be published for the first time.
Note: Laptops to access the website will be useful.
Repeated as A15

H11  Consolidating Basic Number Facts Through the Use of Card Games
Workshop
Linda Baron - Education By Design, VIC
How often do you find children struggle to learn basic number facts or lack fluency and speed in their application because they are disengaged, ‘embarrassed’ to use concrete materials or find it boring? In this session come prepared to have some fun! Together we will explore some simple card games to promote fluency, speed and interest in learning basic number facts. We will also discuss how teacher observations and classroom conversations can assist children to reflect on their learning.
Repeated as G15

H12  Making Maths Marvellous with Manchester and Manipulatives
Workshop
Gabrielle West - Department of Education and Training, NT
This workshop looks at engaging ways to teach the Australian Curriculum: Mathematics strands - Number and Algebra, Geometry and Measurement, Statistics and Probability. Teachers will see what the 4 mathematics proficiencies actually look like in the classroom through a series of hands-on activities that will engage the learner, ask the ‘right’ questions and help students to use problem solving strategies and think about their learning. Participants will use tablecloths, tea towels, angle wheels, elastics, coloured paper, paddle pop sticks, 100 grids, money and fraction walls, dice, dominoes, decks of cards and other manipulatives to create motivating, real activities and investigations as part of this enjoyable session.
Note: Please bring a camera to take photos of the activities.
Repeated as C18

H13  Grouping for Problem Solving: ‘Same Pace of Thinking’
Workshop
Dr Gaye Williams - Deakin University, VIC
Judy Harrington - Brunswick South West Primary School, VIC
Sharon Goldfinch - Brunswick South West Primary School, VIC
Gaye and teachers at Brunswick South West Primary School have worked together since 2004, developed strategies for implementing problem solving in mathematics, and investigated effects of varying group composition. In this session, Gaye (previous classroom teacher now researcher), and Judy and Sharon (Grade 5/6 teachers) share what they have learnt about how grouping by ‘same pace of thinking’ rather than performance (mixed, similar) can increase learning opportunities. Participants will work in small groups, try grouping their own students this way, and develop strategies, and identify issues for discussion. Bring a class list (and maybe individual student work): to stimulate thinking/discussion.
Note: Not obligatory - Can bring class list and examples of those students’ problem solving activity.
Repeated as D16

H14  Using Excel to Create Statistical Displays
Computer Workshop
Jean Arnott - Australian Bureau of Statistics, VIC
The ability to create statistical displays with and without digital technologies is expected in the Australian curriculum from Year 3 upwards. Students who efficiently use technology to create graphs are equipped to undertake rich statistical investigations. In this hands-on session participants will learn how to construct frequency tables using the countif function and then use these to construct bar charts and histograms, pie graphs, picture graphs and dot plots. A tool for drawing box plots will also be shown. Authentic data will from the CensusAtSchool questionnaire be used. The session is suitable for teachers with beginner level Excel skills.
Repeated as G19
H15  15 Top Tips to Re-Energise Your Teaching of Mathematics
Lecture  Years: 4 to 10

Greg Warmbrunn - Carey Baptist Grammar School, VIC

In the cut and thrust of crowded timetables, extra-curricular activities, rambunctious students, demanding parents and the feeling you’re on your own in the teaching of mathematics, we all need to be re-encouraged, at times, with a tool set of skills and ideas that will assist in our daily teaching practice. This seminar is designed to equip, empower, energise, and re-inspire you to take on the challenges of each class so both you and your students look forward positively to the shared learning time together. All teachers are welcome, but particularly teachers starting out in their career are encouraged to attend.

Repeated as E20

H16  A Problem to Tease You
Workshop  Years: 4 to 10

Prof Derek Holton - University of Melbourne, VIC

I will take one problem and show how it might be used in a classroom. The problem should be accessible in various ways to students at different levels. It will involve extensions and generalisations and I hope to give some idea of the way a mathematician works when looking at a problem. As it turns out that is not too different from the way students are able to look at problems. This session is a repeat of another session but with a different problem.

Note: Pens, paper and brains are necessary.

Repeated as C28

H17  To LAF or Not to LAF That is the Question?
Workshop  Years: 5 to 8

Christine Lenghaus - Traralgon College, VIC
Jason McIntosh - Traralgon College, VIC

Multiplicative thinking is no LAFfing matter! The Learning Assisted Framework (LAF) is a DEECD resource which our school has run over the past three years for our Year 7 students. It is designed to scaffold a student’s learning in moving from additive thinking (35+35+35) to multiplicative thinking (3x35). This mode of thinking is the basis to move our students on in fractions, algebra, ratio and other topics. In class, our LAF lessons are run in groups of like ability, so come and see how we have evolved this resource, run it in our classrooms and experience some of the activities!

Repeated as D20

H18  RANTS (and Raves!): Rich Algebra and Number Tasks
Workshop  Years: 5 to 9

Lorraine Day - University of Notre Dame, WA

Rich tasks, incorporating open-ended questions and investigations, can be used to expose students to alternative representations, reasoning and approaches to problem solving leading to deeper understanding. Students who are encouraged to look for patterns in their answers will discover rules and make meaning of them rather than trying to memorise rules that have no meaning for them. The Number and Algebra Strand of the Australian Mathematics Curriculum provides an opportunity for the development of rich tasks to link algebraic reasoning and arithmetical thinking to develop them simultaneously. The process of personalising, contextualising and adapting existing tasks to ensure they are rich, relevant and have the Mathematical Proficiencies embedded provides further opportunities. There are some great tasks and puzzles available that can be used as the catalyst for developing tasks that reflect your personality and interests and those of your students.

Repeated as E24

H19  Online Maths Resources
Computer Workshop  Years: 5 to 10

Hang Nguyen - Koonung Secondary College, VIC

Teachers will be shown a wide range of free resources and programs that are available online; including Maths activities, to printable worksheets, to downloading videos from Youtube.

Note: Please bring along a USB stick.

Repeated as D24

H20  Spreadsheets - The Ultimate Maths Tool
Computer Workshop  Years: 5 to 12

Glenn Sullivan - Wonthaggi Secondary College, VIC

This session will explore the option of using spreadsheets in the classroom. Sample spreadsheets that help student learning will be introduced. Several spreadsheets will be developed as a student would develop them in a classroom. Participants will use functions, formatting, charts and lookup tables. Suitable for new and intermediate spreadsheet users - upper primary school to senior secondary

Note: Bring a USB to download your work.

Repeated as B29
H21  An Introduction to Programming in Scratch  
Workshop  
Years: 7 to 8  
Jan Honnens - Christ Church Grammar School, WA  
Scratch is a free graphical programming language where students can seamlessly create programs by snapping graphical blocks together into stacks. It is available from http://scratch.mit.edu/. In this session we will construct some simple Scratch programs dealing with polygons, coordinates, transformations, fractals and probability that feature in our Scratch Programming Projects for Years 7-8.  
Note: If possible - bring laptop with Scratch already installed.  
Not repeated

H22  Quiz-it Maths! A Trivia Show Mixing Pop Culture With Maths  
Lecture  
Years: 7 to 8  
Pete Curry - Quiz It, VIC  
David Warneke - Quiz It, VIC  
Commercial Presentation  
Quiz-it maths combines year level appropriate subject matter with pop culture to produce an entertaining and educational trivia competition. Designed for Years 7 and 8 the quiz is an excellent way to gauge student's knowledge before an idea is explored, or to revise content. Quiz-it maths includes DVD games, such as The Triangulator, Maths Genie, PrimeTime, Panda’s Problem and many more. This demonstration will re-create the incursion where professionally trained, energetic Quiz Meisters will come to your school to present the quiz in a location of your choice. Questions are presented along with current pop music to create an exciting and competitive environment that will make you feel like a TV show has arrived at your campus. This is the most fun you will have at the MAV conference. As one participant commented last year..."This was the best session ever!" And another... “I can’t believe I won a double movie pass, it was much better than the protractor I won in the geometry session before lunch!”  
Repeated as C32

H23  Differentiating Maths Teaching at Secondary Level  
Lecture  
Years: 7 to 10  
Dr Ian Lowe - The Mathematical Association of Victoria, VIC  
The wide range of levels of student achievement in all classes creates a challenge for any teacher. It is impossible to adequately meet the learning needs of this range of students through textbook use. Ian has spent a long career developing alternatives to help students understand and enjoy learning mathematics. The main elements are hands-on activities, group work and differentiation within the classroom. This workshop will also explain the use of “Teach Maths for Understanding”, free to MAV members on <www.mav.vic.edu.au>.  
Not repeated

H24  Using Qedoc on Netbooks to Provide Multimedia Differentiation with LMS Student Tracking  
Lecture  
Years: 7 to 10  
Damien Bushby - VIC  
Qedoc reader is free software that runs well on netbooks to allow multimedia questions. Student tracking is available on an LMS (such as on Moodle via QuizPort) without the need for continual server access. Teachers can create their own publically available modules (free version) or limit access to their school (paid licence). As well as mathematical based questions containing variable (randomly generated) values there are questions types that can contain sounds and pictures. With thoughtful structuring of modules students can be differentiated towards consolidation, standard progression or acceleration.  
Note: Please bring your own laptop - fully charged.  
Repeated as D29

H25  The Evolution of the Turtle from LOGO to Lego Mindstorms Robots  
Lecture  
Years: 7 to 10  
Nathaniel Bradshaw - Caroline Chisholm Catholic College, VIC  
This presentation will explore the history of the LOGO programming language and its uses in the maths classroom then look at practical activities involving Lego Mindstorms Robots for students in Middle Secondary.  
Repeated as G29

H26  Maths Magic and Puzzles Worked Into a Year 9 Program  
Workshop  
Years: 7 to 10  
Brian Lannen - Victory Lutheran College, VIC  
The presenter will report on how he incorporated puzzles, jokes and the ‘mathemagic’ idea into his Year 9 program and how students have responded to it. The core of the workshop, however, will be an opportunity for participants to learn the mathematics behind the magic and practise these tricks for themselves. Participants will also be invited to share any other maths magic that they know.
MATHOMAT is a widely available, inspiring, resource. This workshop presents a range of creative drawing possibilities with MATHOMAT including: investigation of symmetry, construction of 3D models from nets, the use of bearings and scale rulers with maps, and representation of 3D shapes on paper. There will be a presentation of the creative work by students at Emmanuel College using MATHOMAT to explore tessellations with mixed, and boys only, groups of 50 Year 8 students on their school project day. The session concludes with reflection and discussion about the ability of non assessed school projects to foster relational understanding of mathematics.

**Repeated as A38**

**H28**  
**assessON - Assign, Monitor and Track Student Progress with ease**

**Computer Workshop**

- Shirley Sharpley - Jacaranda (Wiley), VIC
- Emmanuel Azali - Jacaranda (Wiley), VIC

Commercial Presentation

Are your students doing their Maths homework? Are they getting it right? Exactly what do they understand and where do they need more help? This session will unveil assessON, a powerful, effective online tool for Mathematics that answers all these questions. It assesses students’ readiness FOR learning, their progress AS they learn and their levels OF learning. Facts are that teachers armed with this information are much better placed to undertake targeted intervention with their students. Learn how this tool can be seamlessly integrated into your classroom and how it dovetails into the new Jacaranda Maths Quest 7-10A Australian Curriculum series.

**Note:** Participants will each receive a free access code to an assessON title of their choice.

**Repeated as G31**

**H29**  
**You Sunk My Space Ship!**

**Computer Workshop**

- Hayden McQueenie - Victoria University, VIC
- Chris Ly - Point Cook Senior, VIC

Battleship is an engaging and fun way for students to learn Directed Number concepts and skills, but is restrictive in the sense that only single co-ordinates are dealt with at any one time. In this workshop, we will use Geometer’s Sketchpad to play an extended version of Battleship, which involves controlling the trajectories of powerful lasers, and discuss how through playing this game, students can gain an understanding of Linear graphs. We will also discuss how to extend the game further to cover more advanced concepts. Prior knowledge of Geometer’s Sketchpad will not be necessary.

**Repeated as F37**

**H30**  
**What’s an English Teacher Doing in a Mathematics Classroom?**

**Lecture**

- Dr Ray Williams - St Mark’s Anglican Community School, WA

This session will outline the exciting consequences of seriously integrating Mathematics and English by a teacher from each discipline as part of bigger pedagogical project. Key areas of the English Curriculum of Picture Books, Poetry Analysis and Satirical Story were explored in the mathematics classroom providing unexpected and eye-opening results for both teachers involved.

**Note:** Laptops not essential, but participants encouraged to bring them.

**Repeated as G35**

**H31**  
**Taking a Chance - Personalised Maths in Action**

**Workshop**

- Shane O’Connor - Consumer Affairs Victoria, VIC
- Roslyn Mullins - Consumer Affairs Victoria, VIC

Everyday numeracy issues exist within the myriad of gambling products available today, from lotto numbers and dividends through to the statistics of winning at roulette. Consumer Affairs Victoria’s Responsible Gambling resource is a comprehensive educational tool for teachers - with activities, video clips and reflective exercises - that promote personalised maths learning in this important social context. This workshop will provide teachers with an opportunity to explore the maths within chance, probability and data and how students can apply maths skills on a personal level. All attendees will receive a free copy of the Responsible Gambling resource.

**Repeated as B39**
H32 Mathematical Pedagogy - Traditions, Technology and Nspired Lumeracy
Lecture
Rama Ramakrishnan - Bullsbrook District (K-12) High School, WA
Teachers around Australia have made significant progress in recent years towards achieving effective integration of technology in their classrooms, in the senior and junior secondary years, to enhance and engage students’ learning of mathematics. Texas Instrument’s TI-Nspire machines and the Texas “Navigator” wireless communication systems enhance the pedagogy and ‘risk taking’ by the learners. This combined with the use of Lumeracy resources will engage and inspire the students. * The word Lumeracy was coined by Kuppuswamy Ramakrishnan (known as Rama), Teacher and Educationalist in 2011 who defined it as a word to represent being educated with knowledge to read, write and use numeracy, manage information, express ideas and opinions, communicate in an ethical manner, make decisions and solve problems. Numeracy, the portmanteau of “numerical literacy” was coined in 1959 by the UK Committee on Education, presided over by Sir Geoffrey Crowther.

Not repeated

H33 Expansion and Factorisation
Workshop
Stephen Swift - Retired, QLD
A concrete model is used for expansion of brackets and factorisation of expressions including quadratics. Students colour and cut up some paper to represent numbers and variables and manipulate these to expand brackets and to factorise expressions. Participants will use pre-made materials to allow time for their use. The model naturally links physical manipulation to mental processes and allows all students access to factorisation of quadratics. The system used in this workshop can also be used to model integer operations and solution of linear equations.

Not repeated

H34 Mathematica™: Pandora’s Box or Classroom Empowerment II? Curriculum Development with Mathematica™
Lecture
Dr Brenton Groves - Independent Researcher, VIC
Wolfram offers economic ways for teachers and students to acquire a copy. Details in the presentation. Learning to program Mathematica™ is identical to becoming fluent in a foreign language; one must learn the vocabulary and grammar. Mathematica™ has an advantage in that each ‘word’ has one meaning and the grammar is extremely flexible. Wolfram/Alpha produces Mathematica™ syntax from ordinary English requests. This presentation will contain a number of simple interactive demonstrations of programming, the Modify process, and slide show generation. It will be available on the web so teachers can investigate the material at their own pace afterwards.

Repeated as F39

H35 High-Speed Beanie Kids and Quadratic Functions
Workshop
Anthony Harradine - Potts-Baker Institute, Prince Alfred College, SA
With the help of two Beanie Kids, high-speed video footage and of course mathematics, Anthony will share a wonderfully engaging and mathematically rich activity that your students (across the ability spectrum) will never forget. You will develop an authentic mathematical model, consider its limitations, use it to predict the outcome of a very funny event and perhaps best of all, you will be able to ‘see’ how accurate your prediction was. You will leave with everything you need to use the activity in class, just print and enjoy the experience.

Note: Please bring along, if you can, a graphic calculator or laptop with MS Excel. Loan technology will be available.

Not repeated

Lecture
Daniel Milutinovic - Southern Cross Micro, VIC
Christopher Longhurst - Australian Catholic University, NSW
Using hand-held technology in the classroom has been both a breakthrough in making mathematics real for students and a new pressure on the teacher. Using technology should be an easy, seamless process for both teacher and student. In this workshop we will demonstrate that simple programs written for the hand-held device can be an advantage not only for the explanation of difficult concepts but allow the student to visualise the mathematical concepts fully. A library of applications, created specifically to address the needs of students studying mathematics in Victorian secondary schools, comprises a set of powerful programs that employ intuitive, easy to use interfaces grouped according to subject. Students can, for example, run a program in the Specialist Mathematics folder to study motion on an inclined plane, a program in the Mathematical Methods folder to study the unit circle or estimate the gradient of a curve at a point, or a program in the Further Mathematics folder to automatically smooth data or find the maximum flow in a network. This allows lessons to be easily planned, taught and understood by the students.
Note: A class set of hand-held calculators will be provided for participants to use throughout the presentation.
Repeated as D43

H37 Hands-On ClassPad Tips and Tricks for Upper School Teachers
Workshop Years: 10 to 12
Charlie Watson - The Tuition Centre, WA
This workshop is a hands-on session for teachers to explore some of the not so obvious features of the Casio ClassPad that are useful for them and their upper school students. We will be jumping between Main, eActivities, Geometry and most other applications. Participants are assumed to have a reasonable working knowledge of ClassPad to keep up with the hands-on activities, but if you don’t, just come along, sit back and let the ideas wash over you. Bring your own ClassPad where possible and you can load copies of the activities onto it.
Note: There will also be ClassPad’s to borrow.
Repeated as C51

H38 It’s Christmas! Let’s Celebrate and Pop a Cork… or Two!
Workshop Years: 10 to 12
John Bament - O’Loughlin Catholic College, NT
We are going to investigate how pressure changes and makes a particular sound; for example, when you open a champagne bottle by using a pressure sensor with a syringe. The syringe represents the bottle and the plunger represents the cork; the sensor measures how the pressure changes over time when you pull the plunger from the syringe. We are going to set up our own experiment and see how you can configure sensors and triggers so you will not miss the actual ‘pop’.
Repeated as C52

H39 TI-Nspire CAS Notes Application - A Hidden Treasure
Workshop Years: 10 to 12
Neale Woods - Distance Education Centre Victoria, VIC
As one of the seven TI-Nspire CAS applications, the Notes application is much more than a simple text window used to complement the other applications. It is often overlooked by teachers who are unaware of the powerful tools and dynamic linking available in this application. In this session, participants will have a hands-on opportunity to learn how to use many of the exciting features of the Notes application.
Note: TI-Nspire CX calculators will be provided. Participants may elect to bring their own handheld or laptop.
Not repeated

H40 Using Mathematica in the Classroom - By Teachers for Teachers
Lecture Years: 10 to 12
Karen Reid - Broadford Secondary College, VIC
Carmen Popescu-Rose - Loreto Mandeville Hall, VIC
Mathematica is computational software which we, as teachers, have discovered to be a very powerful teaching and learning tool. It helps demonstrate concepts, create supporting course materials, assessment tasks, and presentations, and engages students in interactive learning, exploring and developing an understanding of mathematical concepts. It can be used from basic computations to very complex operations. Bring your laptop and begin to explore and use some of the functionality of Mathematica for the classroom. Teachers from government schools have access to Mathematica as part of the EduStar package. Teachers who do not have a Mathematica licence can download a free trial version from Wolfram Research.
Note: Bring your own laptop, fully charged, with eduStar image or Mathematica downloaded. (Free 30 day trials usually available).
Repeated as D27

H41 Cubics and Tangents
Workshop Years: 11 to 12
Shane Dempsey - Baimbridge College, VIC
Peta Taylor - Baimbridge College, VIC
This hands-on session will use the TI-Nspire CAS handheld to investigate tangents to a cubic function and their relationship with the roots of the function. This is a task that many senior maths teachers will be familiar with and the TI-Nspire CAS allows investigation of the general case to be explored thoroughly.
Repeated as G45
H42  Java Applets in Teaching Calculus
    Computer Workshop  Years: 11 to 12
    Yuriy Verkhatsky - Carwatha College, VIC

Interactive Java applets for teaching and learning single variable calculus use graphs and tables to illustrate concepts in calculus and allow the user to dynamically change the functions involved or the point on the graph that is of interest. These applets can be explored by students learning calculus, or used by teachers while teaching calculus. Visualising is always a good way to enhance understanding of any math concept and it is especially important in teaching calculus as calculus is the mathematics of change. All basic concepts (limit, derivative, integral) are dynamic. So if we really want to understand concepts of calculus, we need to see them.

Not repeated

H43  SACs for Years 11 and 12
    Lecture  Years: 11 to 12
    Steve Morris - Jacaranda (Wiley), VIC

    Commercial Presentation

Do you want to get a head start on preparation for next year’s VCE classes? Do you want fully editable School Assessed Coursework tasks that come with fully worked solutions? Do you want Application tasks that have depth as well as breath and Analysis tasks that are comprehensive? In this session, you will be provided with some samples of Jacaranda’s new SACs for VCE Mathematics. You will have the chance to go through some SACs with an experienced and practising teacher who can provide lots of useful hints and tips.

Note: Participants will receive customisable SACs to a VCE Mathematics subject of choice.

Repeated as G47
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Stephen Swift - E33, F29, H33
Hussein Tahir - D48, G44
Ian Taylor - C45, E37
Peta Taylor - G45, H41
Greg Thomas - G10, H4
Julie Thompson - A14, H9
Leigh Thompson - E27, F28
Viv Thompson - C2, D2
Dr Tin Lam Toh - B33
Dave Tout - C-D3, E42, G33
Assoc Prof Colleen Vale - A11, C10, F8, HK1
Marcel van Otterdyk - E38
Yuriy Verkhatsky - G46, H42
Rob Vermay - C46, F16
Jennifer Vincent - C-D1
Nadia Walker - BK1
Roger Wander - A-B5, F-G7
Greg Warmbrunn - E20, H15
David Warneke - C32, H22
Prof Elizabeth Warren - G3
June Warren - B50
Sandi Warrick - C7, D7
Charlie Watson - C51, D46, G43, H37
Gabrielle West - C18, H12
Prof Martin Westwell - A30, B15, C13, D11
Leah Whiffin - A46, B45
Dr Wanty Widjaja - A11, F8
Kate Wilkins - A10
Douglas Williams - A3, B20, C21, D19, E17, F19, G18, H7
Dr Gaye Williams - C10, D16, E19, G20, H13
Dr Ray Williams - A39, B37, G35, H30
Joe Wilson - D38
Sue Wilson - F18, G17
Neale Woods - C-D4, H39
Pam Wright - A7, F4
Donna Yates - A12, B7
Lachlan Yeates - A34, E32
Alexander Young - A5, B42, F3, G41