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#### Thursday 4th December

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<tr>
<td>Session C</td>
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<td>46</td>
</tr>
<tr>
<td>Session C-D</td>
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#### Friday 5th December

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### Listing of Sessions by Presenter

#### Special Note:

There are three “Extended Sessions” at the conference: A-B, C-D, F-G. 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.
“Maths Rocks!”

Welcome to the 2014 MAV Annual Conference.

In 2013 we celebrated the Mathematics of Planet Earth. This year we are holding up our hands with our index and little fingers extended to say “Maths Rocks!” We hope you are just as excited about mathematics as we are, because this year it’s time to think outside the square and talk about reinvigorating maths in the classroom.

To fit with our theme we are starting the conference with something different. Three presenters with 10 minutes each talking about Reinvigorating Maths in the Classroom. You, our wonderful attendees, will then have the opportunity to ask questions of our panel and each other. This will be an open forum with the opportunity to ask questions online as well as live. Peter Sullivan from Monash University will have the job of MC’ing the debate and we wish him luck controlling the excitement we know this will generate.

Before that starts, something even better… During the year we have been running a student competition to write the best Maths song. This will be performed at the opening of the conference by either the students who wrote the song or a professional musician. This will surely get your blood pumping and your feet tapping.

Our Closing Ceremony this year will be conducted by Dr Andrew Prentice as he discusses “A Mathematician’s Journey to Understanding the Origin of our Solar System”. Dr Prentice is an Australian mathematician who is known for having made a range of unorthodox yet accurate predictions about the solar system. To the surprise of many of his colleagues, NASA missions have confirmed that many of his hypotheses were remarkably accurate. He also established the theory of supersonic turbulence.

Another key strength of our conference is the ongoing support we receive from our sponsors. Major Sponsors include Texas Instruments, Casio, Oxford University Press and Cambridge University Press. We would also like to thank all of our minor sponsors for this year. Please take the time to visit them at our exhibitor’s hall.

Thank you to Julie Allen and her team from The Full Pretzel and the team in the MAV office who have worked tirelessly this year beside the conference committee in order to bring this conference to you. I know that this dedication to provide all our delegates with a first class conference continues well past the time the last delegate leaves for home on the Friday.

I look forward to seeing you all at La Trobe University in December.

Michelle Huggan
Conference Convenor
PROGRAM

THURSDAY 4th 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  Student “Maths Rocks!” Competition Winners
9:30am - 10:20am  Maths Smackdown - Facilitator: Professor Peter Sullivan.
                   Panel: Narissa Leung, Mike Woods, Dr Paul Swan
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 5th 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 - Dr Andrew Prentice

Extended Sessions:
There are three “Extended Sessions” at the conference: A-B, C-D, F-G. 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

Parking: Car parks P3, P2 and P6 (Free for conference days)

KEYNOTE SPEAKERS:
◊ Steve Andrew - Geelong Grammar School
◊ Louisa Barnsley - Australian National University
◊ Professor Michael Barnsley - Australian National University
◊ Dr Steven Bird - The University of Melbourne
◊ Latham Burns - Abbotsford Primary School
◊ Dr Michael Evans - Australian Mathematical Sciences Institute (AMSI)
◊ Dr David Leigh-Lancaster - VCAA
◊ Narissa Leung - Campbells Creek Primary School and Guildford Primary School
◊ Jennifer Palisse - Mater Christi College
◊ Jodie Parsons - Sunshine College
◊ Stéphanie Pradier - Australian Mathematical Sciences Institute
◊ Dr Andrew Prentice - Monash University and University of Southern Queensland
◊ Yvonne Reilly - Sunshine College
◊ Dr David Shallcross - The University of Melbourne
◊ Professor Kaye Stacey - The University of Melbourne
◊ Dr Paul Swan
◊ Dave Tout - Australian Council for Educational Research (ACER)
◊ Ross Turner - Australian Council for Educational Research (ACER)
◊ Michael Woods - Media Saints

CONFERENCE OFFICE CONTACT:
Julie Allen - Event Manager
Lana Allan - Event Manager
PH: 61 3 9389 0312
MB: 61 411 243 029
Email: 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

Cancellation Policy:
Participants who cancel their booking on or prior to Monday 10th November 2014 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 10th November 2014. Registration may be transferred to another person.
REGISTRATION INFORMATION

Registration Fees:
1. Session Registration
   - 1 Day
     - Member Metro: $236
     - Member Non-Metro: $229
     - Non-Member: $306
     - Student: $123
   - 2 Days
     - Member Metro: $471
     - Member Non-Metro: $458
     - Non-Member: $612
     - Student: $244
2. Conference Dinner (Thursday 4th December): $84
3. Happy Hour (Thursday 4th 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 $612 at the non-member rate and we will include an individual membership for 2015 (valued at $142).

Before you begin you will need to have the following before you start your registration:
1. Your username and password to register online, if unsure ring the MAV office on 61 3 9380 2399.
2. School purchase order number or credit card for payment.
3. Contact at school to approve your registration.
4. List of the sessions you want to attend.

To Register:
1. Go online to http://registration.mav.vic.edu.au/Reg/
2. Log in using your username (email) and password. If logged in correctly it will display your name.
3. Once logged in, click on the box that has the MAV Annual Conference - choose your sessions, social program, food, accommodation, etc then click confirm.
4. Check the summary and amount you have been charged - If you think you are a member but have been charged as a non-member call our office 61 3 9380 2399.
5. Click on either Purchase Order or Pay Online.
6. You will be asked to put in the name, position and email address of a person of authority to sign off on your registration.
7. Click on “Submit” to complete your registration.
8. Print out a copy of your confirmation for your records.
9. 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 affects the amount transacted and these changes will have to be made by the MAV 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 4th 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 SUNDAY 30th NOVEMBER 2014 AT 5:00PM
Lunch

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)
◊ Grain Express (V)
◊ Life Skills (V)
◊ Charlie’s Coffee & Kebabs (H,V)
◊ Café Xpresso (V)
◊ Veloci Café (V)
◊ Mamak Rice and Noodle (V)
◊ Café Spice (H,V)
◊ Caffeine Café
◊ Vital@t (V)
◊ Fusion Pizza (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 - Lemon chicken, stir fry mix veg, steamed rice AND bottle of drink
Cold - Lunch box of roast chicken and salad roll, veg sushi, piece of fruit AND bottle of drink

Friday
Hot - Rainbow steak, stir fry mix veg, steamed rice AND bottle of drink
Cold - Lunch box of Teriyaki chicken and salad roll, veg sushi, piece of fruit AND bottle of drink

Eagle Café

Cottage pie served with garden salad AND 375ml drink
Tandoori chicken and roast potatoes served with garden salad AND 375ml drink
Crumbed fish - served with mashed potato, garden salad AND 375ml drink

Agora Square

Grain Express
3 choices of Japanese combo dishes OR any menu order dish AND one can of drink

Life Skills
One curry and rice OR frittata OR pie of the day AND a cookie AND coffee or water

Charlie’s Coffee & Kebabs
Freshly made sandwich/wraps/roll including: Thai grilled chicken and salad OR falafel with tabouli and hummus (vegetarian) OR chicken schnitzel with lettuce cheese and mayo OR BBQ chicken and salad AND bottle of water or fruit juice AND piece of fruit

Café Xpresso
Any focaccia AND soft drink AND piece of fruit (apple or banana)

Veloci
Main meal AND piece of fresh fruit (apple or banana) AND cold drink (water, juice, Coke, Pepsi) AND chocolate treat
Main Meal: Grilled chicken and salad focaccia OR Tandoori chicken wrap OR beef and salad roll OR chicken and avocado pasta salad OR Caesar salad OR pizza and pasta
Main Meal (Vegetarian): Falafel tabouli and humus wrap OR potato and egg salad OR garden salad OR vegetarian pizza and pasta
Mamak Rice and Noodle
Chicken, beef or vegetarian with vegetables on rice or stirred with hokkien noodle with variety sauce/satay sauce/black bean sauce/teriyaki sauce/chili sauce/oyster sauce/sweet chili sauce AND can of drink

Café Spice
Large serve combination of any two curries served with rice from a selection of 3 meat and 3 vegetarian curries AND one naan bread AND soft drink can or bottle of water or mango lassi

Caffeine Café
One of the below AND assorted fresh fruit OR melting moment AND regular drink (coffee, water, juice, can of soft drink)
Gourmet Baguette: Smoked salmon with cream cheese and salad OR chicken with avocado, mayo and salad OR vegetarian delight
Gourmet Wrap: Garlic aioli, falafel and salad OR chicken, avocado, bacon and salad
Homemade Vietnamese Rice Paper Roll Pack (Pack of 3 rolls): Vegetarian OR prawn OR Teriyaki chicken
Three Homemade Sushi: Assortment of Veg, chicken, salmon, prawn, crab, tempura prawn
One Brown Rice Salad on Thursday (Vegetarian Included)
One Quinoa Salad on Friday (Vegetarian Included)

Vital@t
Chicken tender wrap OR Turkish roll OR baguette OR rice paper roll OR steam dumplings OR BBQ chicken roti OR bagel OR large salad AND can of soft drink AND piece of seasonal fruit

Fusion Pizza
Two slices of pizza AND small chips AND potato cake/dim sim/hash brown AND can of soft drink AND piece of seasonal fruit
Two chicken drumsticks OR whole Maryland OR lasagne AND small chips AND can of soft drink AND piece of seasonal fruit

HAPPY HOUR
DATE: Thursday 4th 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
A Dinner to Die For....
DATE: Thursday 4th December
7:00pm - 10:30pm
VENUE: John Scott Meeting Hall, La Trobe University
Flashback to the 80's. A group of famous, or should we say infamous, celebrities have arrived for a VIP dinner. Suddenly a scream cracks the air, one of the superstars of rock has been (dun, dun, dun...) murdered.

Who did it? Come on the journey through the evening as we try to find the elusive killer amongst us. Come dressed as your favourite star, from this era, the last or the next!

The price $84 includes three course dinner, beer, wine, soft drinks, participation in evenings activities.

A bus will pick up dinner attendees from Rydges at 6:45pm and then at the end of the evening at 10:30pm to return to Rydges.
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

GLENN COLLEGE
Student Rooms (limited availability)
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.

Student Room $ 45.00 Per Room/Per Night

All rooms are subject to availability. We have placed a limited hold on rooms so book early.
Anniversary Lecture + 3 Panelists = Maths Smackdown!

Thursday 4th December - 9:30am-10:20am, Agora Theatre

Three presenters, 10 minutes each and questions from the audience. The topic: “Reinvigorating Maths in the Classroom”. Join us as we share, discuss, debate and generally give this very important issue a good working over. Peter Sullivan will be our host to guide us through the morning. Our panelists will be:

Narissa Leung, Principal at Campbells Creek and Guildford Primary Schools in Castlemaine. In 2012 she was awarded the prestigious Lindsay Thompson Fellowship at the Victorian Education Excellence Awards. This award was given in recognition of her work in leading teachers across her Region to improve their practices in curriculum delivery and ICT integration. She has visited schools across Australia, Singapore, China and the USA, researching best practice in technology integration, pedagogy and leadership.

Michael Woods started his career after high school running video game tournaments and broadcasting them on the internet. When he started, professional gaming was done in LAN cafés & scout halls, though he had a vision to take it into the TV studio and put it on show for the public. Today he is the Co-founder & Creative Director at Media Saints who make educational games, websites, apps, films, adverts and lots more. Media Saints most rewarding projects have been Knowledge Quest, Create Explore Learn at The Royal Children’s Hospital, Whack A Bone, Fruitoria and sending Big Ted to the Moon. Michael talks at conferences around the world about games, technology and Generation Y. He recently received a fellowship to the Australian CEO Institute, is an Associate Fellow of the Australian Institute of management and been listed in the Australian 30 under 30 a few times.

Paul Swan has taught at primary, secondary and tertiary level, with his most recent position as senior lecturer in mathematics education at Edith Cowan University. He now spends time advising Schools and Principals on how to improve the teaching of mathematics in their schools, writes books and develops games. He was awarded his PhD in 2002 for his work on how children make computation choices and how well they execute those choices. He was recently awarded an Honorary Fellowship from the Australian Council of Educational Leadership for his work with school principals.
Andrew Prentice is an Australian mathematician. He is known for having made a range of unorthodox yet accurate predictions about the solar system. He also established the theory of supersonic turbulence. After matriculating from Melbourne Grammar he decided to pursue a career of research and teaching in mathematics and the physical sciences. Between 1962 and 1967 he studied for the B.Sc. and M.Sc. degrees at Melbourne University and in 1967 was awarded an overseas Science Research Scholarship from the prestigious Royal Commission of the Exhibition of 1851. This enabled Andrew to continue further study at the University of Oxford, where he obtained his doctorate in theoretical astrophysics. During this time he was elected to the very first Junior Research Fellowship of newly established Wolfson College, Oxford. After a short period as a research scientist at Carnegie-Mellon University in Pittsburgh, U.S.A., he was appointed to a lectureship in Applied Mathematics at Monash University. He was promoted to the level of Reader of Mathematics in 1988 and held this position until his retirement at the end of 2010. He was Adjunct Associate Professor in Mathematics at Monash until June 2014 and is now Adjunct Professor in Astronomy at the University of Southern Queensland. He is an Honorary Life Member of the Astronomical Society of Victoria and a Fellow of Mannix College, Monash University. In 2013, he was appointed as Honorary Patron of the online School of Astronomy & Astrophysics, Department of Education, Training and Employment, Queensland Government. During the past 40 years Dr Prentice has developed a radical new theory of how our solar system was formed. He has based his ‘Modern Laplacian Theory’ of the Solar system origin [hereafter the MLT] on the nebula hypothesis first proposed by the French mathematician Pierre S. de Laplace in 1796. Although the theory is still regarded as being controversial, he has gained worldwide prominence through the success of many key predictions that have been based on the theory.
### Session Summary

#### SESSION A: 11:10am-12:10pm Thursday 4th December

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<th>Time</th>
<th>Title</th>
<th>Speaker(s)</th>
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<td>AK1</td>
<td>F to 12</td>
<td>Engaging Students Through Games</td>
<td>Michael Woods</td>
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<td>AK2</td>
<td>10 to 12</td>
<td>An Overview of the Revised VCE Mathematics Study Design</td>
<td>Dr David Leigh-Lancaster, Dr Michael Evans</td>
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<td>A3</td>
<td>F to 3</td>
<td>Connecting the Dots</td>
<td>Anne Milburn, Christine Graham</td>
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<td>A4</td>
<td>F to 6</td>
<td>Are You in Shape for Geometry?</td>
<td>Nancy Surace, Ainslie McIntosh</td>
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<td>A5</td>
<td>F to 6</td>
<td>Teaching Addition and Subtraction Mental Computation Strategies Through a Whole School Approach (F-6)</td>
<td>Bern Long, Angela Rogers</td>
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<td>A6</td>
<td>F to 6</td>
<td>A PD Model for Building Capacity to Improve Outcomes in Primary Classrooms</td>
<td>Donald Eddington, Gem Bagdadi</td>
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<td>A7</td>
<td>F to 6</td>
<td>Teaching and Loving Mathematics in a Mixed Ability Classroom</td>
<td>Peggy Ashton, Jennifer Vincent</td>
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<td>A8</td>
<td>F to 6</td>
<td>Experiences Within the Classroom - The Use of Different Genres to Stimulate Learning</td>
<td>Stephen Lewis, Amanda Salomone</td>
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<td>A9</td>
<td>F to 8</td>
<td>Rich Tasks: The Relationship Between Higher Order Thinking Skills and Problem Solving</td>
<td>Kelly Utting</td>
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<td>A10</td>
<td>F to 8</td>
<td>Valuable Moderation in a Mathematics Classroom</td>
<td>Kathryn Palmer</td>
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<td>F to 10</td>
<td>The 0.67 Effect</td>
<td>Michael Portaro, Sheree Lucas Portaro, Jaynay Miller</td>
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<td>A12</td>
<td>F to 12</td>
<td>Keeping up with Curriculum!</td>
<td>Janine McIntosh, Michael O'Connor</td>
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<td>MAV Maths Talent Quest (MTQ) - Mathematics Investigation Projects</td>
<td>June Penney, Kelly Gallivan</td>
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<td>Posing Mathematical Problems Using Sophisticated Picture Books</td>
<td>Linda Cheeseman, Anuja Singh</td>
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<td>A15</td>
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<td>Teaching as Inquiry in Mathematics</td>
<td>Louise Miller, Gillian Kissling</td>
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<td>Nurturing Number Sense</td>
<td>Dr Paul Swan, Dr Derek Hurrell</td>
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<td>A17</td>
<td>2 to 6</td>
<td>Dynamic Digits</td>
<td>Deborah Reeves, Alison Howard</td>
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<td>A18</td>
<td>5 to 8</td>
<td>Catering for Mathematically Talented Middle School Students: The Peculiar Puzzles of Professor Fibbernacho</td>
<td>Anne Eastaugh, Meg Pini</td>
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<td>A19</td>
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<td>Supporting Low Achieving Student’s Motivation and Engagement in Mathematics</td>
<td>Amanda Ferguson, Helen Rodgers</td>
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<td>3 to 7</td>
<td>Decimals - What's the Point? Planning a Unit of Work for Conceptual Understanding</td>
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<td>Language Difficulties in Mathematics</td>
<td>Robyn Holt</td>
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<td>Using MKT to Teach Proportional Reasoning</td>
<td>Samantha Bothe</td>
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<td>Using Online Collaborative Learning Spaces in Mathematics Education</td>
<td>Duncan Symons</td>
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<td>A24</td>
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<td>Fun With Dynamic Geometry in Pre-schools and Primary Schools</td>
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<td>A25</td>
<td>5 to 7</td>
<td>Anything Can Mean Anything Else: Playing With Codes. A Participatory Workshop Including Working in Small Groups</td>
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<td>From Geometry to Algebra with Polygons</td>
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<td>Creating AusVELS Aligned Assessments Using Socrative</td>
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A42 7 to 12  Reasoning and Proof in Junior High School - Dr Paul Brown
A43 7 to 12  Mathematics of Rock Band Photography - Paul Pascoe
A44 7 to 12  Values in Mathematics: Insight Into Student and Teacher Values in the Classroom - Darren Fitzpatrick
A45 7 to 12  Teaching Mathematics Successfully with Disengaged Learners; An Overview of the EMPower Program - John Lawton, Richard Korbosky
A46 7 to 12  Teaching with the iPad - Freda Armstrong, Ian Taylor
A47 7 to 12  TI-Nspire as a Platform for Dynamic Assessment: Create Your Own Auto-grading Tasks - Dr Stephen Arnold
A48 8 to 12  Exploring the Question Application in TI-Nspire & Navigator - Ray Cross
A49 9 to 10  Investigating Trinomials with Integer Roots - Ray Williams
A50 9 to 10/VCAL MAV’s ‘Biggest Loser’ Gambling Project - Robert Money, Donald Smith, Dr Ian Lowe
A51 10 to 12 Rock Your ClassPad with BYO Functions and Programs - Charlie Watson
A52 10 to 12  Exploring Problem Solving Using Technology Applications - Kevin McMenamin
A53 10 to 12  Learning Experiences with Trigonometric Functions - Yew Fook Chan
A54 11 to 12  Probability and Pell’s Equation - An Algebraic and Experimental Approach - John Kermond
A55 11 to 12  Uncovering Mathematics Misconceptions Through Classroom Discourse Using Strategic Questioning and TI Technology - Chiu Jin Yeo
A56 11 to 12  Senior Mathematics Curriculum - Allason McNamara, Dr Philip Swedosh, Dean Lamson
A57 11 to 12  School Maths to Uni Maths for Engineering and Science - Dr Mary Coupland

SESSION A-B: 11:10am-1:30pm Thursday 4th December
A-B1  F to 6 Analysing the Mathematics Online Interview for Differentiated Learning - Monika Gruss
A-B2  2 to 10 Investigations and the Proficiency Strand - Derek Holton
A-B3  3 to 10 Give Them a Choice - Douglas Williams
A-B4  5 to 9 Jack and Jill’s Buckets and How to Write a Maths Report - Damian Howison
A-B5  7 to 10 Using ‘Algebra Tiles’ to Teach Integers, Expansion and Factorisation - Michael O’Reilly, Norrian Rundle
A-B6  7 to 12 How Does the Digital Classroom Enhance the Effectiveness of the Educator? - Luke Kerr, Peter Fox
A-B7  10 to 12 TI-Nspire to the Next Level - Sanjeev Meston

SESSION B: 12:30pm-1:30pm Thursday 4th December
B1  3 to 10 Add, Subtract, Multiply, Divide and Conquer - Yvonne Reilly, Jodie Parsons
B2  2 to 3 Connecting the Dots - Anne Milburn, Christine Graham
B3  2 to 6 Teaching Addition and Subtraction Mental Computation Strategies Through a Whole School Approach (F-6) - Bern Long, Angela Rogers
B4  2 to 6 Google Drive - The Driver! - Chris Kellett, Brian Wheelahan, Brett Strachan
B5  2 to 6 Teaching and Loving Mathematics in a Mixed Ability Classroom - Peggy Ashton, Jennifer Vincent
B6  2 to 6 2014 Partnerships for Learning - Jennifer Bowden, Ellen Corovic, Ashlie Hassell, Jenny, Briggs, Kaelynne D’cruz, Ivanka Vinski Rebecca, Michelle Lopaticki, Lauren Crack
B7  2 to 7 Developing Geometric Reasoning Abilities Through Visualisation - Dr Rebecca Seah
B8  2 to 8 Rich Tasks: The Relationship Between Higher Order Thinking Skills and Problem Solving - Kelly Utting
B9  2 to 8 Where is the Reasoning? - Associate Professor Colleen Vale, Dr Wanty Widjaja, Dr Sandra Herbert, Dr Leicha Bragg, Dr Esther Loong
B10  2 to 10 The 0.67 Effect - Michael Portaro, Sheree Lucas Portaro, Jaynay Miller
B11  2 to 10 Know Thy Impact - Visible Learning - Shane Ezard, Adam Gilbert, Sheila McCarthy
B12  1 to 5 Geometry With Graphing Calculator for Pre-School and Primary School Students - Dr Pumadevi Sivasubramaniam, Mohd Ariff Jasmi, Richma Richard
B13  1 to 6 Involving Parents in Supporting Children With Their Basic Facts - Colleen Monaghan
B14  1 to 7 Posing Mathematical Problems Using Sophisticated Picture Books - Linda Cheeseman, Anuja Singh
B15  1 to 12 Dyscalculia and Low Numeracy: From a Teacher’s Perspective - Ann Williams
B16  2 to 6 Dynamic Digits - Deborah Reeves, Alison Howard
B17  2 to 8 Card Games in the Mathematics Classroom - Richard Korbosky
B18  2 to 10 Why Learning to Calculate (Mentally) Matters and One Way to Do It - Anthony Harradine
B19  3 to 6 Supporting Low Achieving Student’s Motivation and Engagement in Mathematics - Amanda Ferguson, Helen Rodgers
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B20 3 to 6  Controversial Coops.... Solving the World's Problems One Chicken at a Time - *Marielouise Phillips, Birsin Reynolds*

B21 3 to 7  Language Difficulties in Mathematics - *Robyn Holt*

B22 3 to 8  Making Mathematics Visual - The Model Method That Improves Problems Understanding and Fosters Pre-Algebraic Thinking - *Vei Li Soo*

B23 3 to 10  Aligning Values, Energising Mathematics: How Expert Teachers Do It - *Dr Wee Tiong Seah*

B24 4 to 8  Lets Make Mathematics Rock With Problem Solving - *Jill Peterson, Brenda Walker, Sue Bullick*

B25 4 to 8  Why Me? - Year 7 Modified Maths - *Mark Ljubic, Soraya Davids*

B26 4 to 12  Flipping Mathematics With Adobe Presenter (Free for OSX) - *Dr Tim Kitchen*

B27 5 to 7  Anything Can Mean Anything Else: Playing With Codes. A Participatory Workshop Including Working in Small Groups - *David Demant*

B28 5 to 8  Linking the Australasian Problem Solving Mathematical Olympiads and the Australian Curriculum Proficiencies - *Dr Anne Prescott, Jon Phegan*

B29 5 to 8  Problem Solving - *Daniel Avano, Michael de Zilva*

B30 5 to 8  Earth, Moon and Sun Maths - *Tim Byrne*

B31 5 to 9  Strategies for Problem Solving - *Susie Groves*

B32 5 to 10  Every Student Learning Something Different - Calm or Chaos? - *Jacqui Lee, Dr Jonathan MacLellan, Brad Gibbs*

B33 5 to 10  Informatics - *Adjunct Professor Mike Clapper*

B34 6 to 10  A Tale of Two Activities - *Christine Lenghaus*

B35 7 to 8  How We Doubled Student Learning in One Year - *Ben Schutz*

B36 7 to 9  Juggle and Lift!! Numeracy and Mathematics - *Justine Johnston, Jessica Macrae*

B37 7 to 10  Mathematics of Rock Music - *Adam Kruger, Scott Rumble*

B38 7 to 10  Why We Doubled Student Learning in One Year - *Ben Schutz*

B39 7 to 10  Differentiating the Mixed Ability Maths Classroom: You Can Rock It! - *Meredith Plaisted, Greg Warmbrunn*

B40 7 to 10  From Arrays to Algebra - *Lorraine Day*

B41 7 to 11  20 is the Answer! Using Geogebra, Excel and Logo to Ask the Question! - *John Widmer, Robert Money, Samantha Horrocks*

B42 7 to 12  Grapple with Graphs - *Cathy Devlyn, Heather McCarthy, Angela Raven*

B43 7 to 12  Student Created Technology to Collect Real Data in Mathematics - *Colin Chapman*

B44 7 to 12  Rocking the Maths Classroom - Short Activities to Inspire All Learners - *Duane Anderson, Kara Fox, Dr Barnaby Seviour*

B45 7 to 12  Mathematics: Play, Create, Learn and Problem-solve with Tessellations Using the Graphics Primitive - *Ian Willson*

B46 7 to 12  Rock Maths Lessons With Visuals - *Rodney Anderson, John Bament*

B47 7 to 12  TI-Nspire as a Platform for Dynamic Assessment: Create Your Own Auto-grading Tasks - *Dr Stephen Arnold*

B48 8 to 11  Ferris Wheels, Circles and Pi - *Jenny Curtis*

B49 8 to 11  Mathematica Start Up at 10 and Before - *Lauren Wood, Dr David Leigh-Lancaster, Rohan Barry*

B50 8 to VCAL  It's Hip to be Square - Using Pythagoras in the Trades - *Ruth Ginter, Gilda Alavuk*

B51 10 to 12  Make Your ClassPad Rock in the Classroom with These Tips and Tricks - *Charlie Watson*

B52 10 to 12  Worthwhile CAS calculator Use in This Year’s 2nd Methods Exam? - *Kevin McMenamin*

B53 11 to 12  Fun with Functions - *Bozenna Graham, Raymond Rozen*

B54 11 to 12  Uncovering Mathematics Misconceptions Through Classroom Discourse Using Strategic Questioning and TI Technology - *Chiu Jin Yeo*

B55 11 to 12  On Geometric Locus - *Hussein Tahir*

B56 11 to 12  A Trigonometric Equation That Keeps on Giving - *John Kermond*

B57 11 to 12  Pearson Lightbook - Supporting Good Teaching and Learning in Upcoming Senior Mathematics Courses - *Vanessa Rule, Kerry Nagle*

B58 12 to 12  2013 Specialist Mathematics Examinations - *Allason McNamara, Dr Philip Swedosh, Dean Lamson*

SESSION C:  2:30pm-3:30pm Thursday 4th December

CK1  F to 7  Positioning the Proficiencies - *Dr Paul Swan*

CK2 7 to 12  Positive Education in the Mathematics Classroom - *Steve Andrew*

C3  F to 3  Problem Solving/Reasoning (F-3) - *Richard Korbosky*

C4  F to 6  Mathematical Fluency is More Than Instant Recall of Number Facts - *Greg Butler, Leanne Cummings, Fiona Lindsay*
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C53 11 to 12 2013 Math Methods Examinations - Allason McNamara, Mary Papp
C54 11 to 12 Teaching the Principle of Mathematical Induction in the Specialist Classroom - Andrew Woolley
C55 11 to 12 Developing Exam Question Skills Through Reciprocal Teaching at Sunshine College - Graeme Newman
C56 11 to 12 VCE Further and General Mathematics from 2016 - Professor Peter Jones
C57 11 to 12 The Complete Bivariate Odyssey for Further Mathematics - Russell Brown, Hayley Dureau

SESSION C-D: 2:30pm-4:50pm Thursday 4th December
C-D1 F to 8 Maths Rocks or Maths Sucks - Rob Vingerhoets
C-D2 1 to 7 The Use of Fraction Models to Develop Conceptual Understanding - Dr Heather McMaster
C-D3 5 to 10 Keeping Problem Solving at the Centre - Adjunct Professor Mike Clapper
C-D4 5 to 11/VCAL Having Some Fun With Numeracy and Maths - Dave Tout
C-D5 7 to 12 Programming Using Ti-Nspire - Mehmet Altundal
C-D6 7 to 12 Getting Started with Lua and Ti-Nspire: Create Your Own Powerful Documents for Learning - Dr Stephen Arnold

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D3 F to 6 Would You Rather? Authentic Tasks Matching Proficiencies - Chris Botheras
D4 F to 6 Google Drive - The Driver! - Chris Kellett, Brian Wheelahan, Brett Strachan
D5 F to 6 Mathematical Fluency is More Than Instant Recall of Number Facts - Greg Butler, Leanne Cummings, Fiona Lindsay
D6 F to 6 Evernote: Tracking Student Performance - Lauren Marriott, Michael Portaro
D7 F to 6 Practical Ideas to Assist with the Integration of Numeracy Across the Curriculum - Lee Blake, Hayley Johnston-Coutts
D8 F to 6 Using Challenging Tasks to Develop Problem Solvers - Nadia Walker, Christine Borcek, Michael Rennie
D9 F to 6 Engaging and Challenging Mathematically Gifted Students in the Multi-ability Classroom - Penny Willoughby
D10 F to 6 Revitalising the Teaching of Maths - Professor Philip Clarkson, Bernadette Atkins
D11 F to 6 Exploring Patterns and Algebraic Thinking - Dr Sharyn Livy, Dr Tracey Muir
D12 F to 6 Problem Solving Now - Unlocking Student Potential - Cassandra Lowry, Marguerite McGrath
D13 F to 6 Implementing Problem-solving at Eagle Point Primary School: A Whole School Approach - Anna Duncan, Natalie Clarke, Dr Gaye Williams
D14 F to 7 Why Maths Hurts - Rhiannon Lowrey
D15 F to 8 Focussing on Big Ideas to Connect Concepts, F-8 - Anita Chin
D16 F to 10 Getting Started with Sustainability and the Mathematics Curriculum - Angela Andrews
D17 F to 10 The Future of Maths Education - Adapt, Personalise and Gamify! - Michelle Kueh
D18 1 to 8 Problem Solving Integrating Number and Measurement - Rose Golds, Marie Hirst
D19 1 to 8 Creative Communication in Mathematics - Samantha Stewart, Deborah Reeves
D20 2 to 8 Teaching Mathematics Developmentally - Bruce Williams
D21 2 to 12 Taking Tricubes to the Limit - Douglas Williams
D22 4 to 6 Using Magic Tricks in the Teaching of Math - Sijiang Fu, Pamela Foong, Pearllyn Gan
D23 4 to 12 Developing Strategies for Computational Consistency Across Years 4-12 with Wolfram Research - Craig Bauling
D24 4 to 12 More Down to Earth Mathematics - Leigh Thompson, Jacqui Kerr
D25 5 to 8 Number and Algebra - How to Connect These Concepts and Let ‘Em Rock - Ian Bull
D26 5 to 10 MS Excel Skills for What Graph to Use When - Iqbal Hossain, Rudy Birsara
D27 5 to 12 Stop Shotgun Teaching - Start Differentiated Learning - Anthony Nunan
D28 6 to 9 Developing Algebraic Thinking: Providing New Tools to Understand Mathematical Relationships - George Booker
D29 6 to 11 Blasts from the Past - Engaging Activities in Maths - Ken Ellis, Rick Swan
D30 6 to 12 iPads in the Classroom - Ro Bairstow
D31 7 to 9 Teaching Negative Numbers with 100% Success!! - Helen King
D32 7 to 10 ClassPad as a Learning Tool - Alastair Lupton
D33 7 to 10 Rock Mathematics Pedagogy with Some Bubble and Squeak: An Eclectic Approach - Rama Ramakrishnan
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D34 7 to 10 Delivering an Online, Differentiated Curriculum - Andrew Burden, Laura Higginbottom, Joennena Vaughan
D35 7 to 10 Cashtivity - Experiential Learning in Action - Marissa DiPasquale, Nicola Harle
D36 7 to 11 20 is the Answer! Using Geogebra, Excel and Logo to Ask the Question! - John Widmer, Robert Money, Samantha Horrocks
D37 7 to 12 Calculating Without a Calculator - Associate Professor Marj Horne
D38 7 to 12 I Got a Job as a Maths Teacher. Now What? - Peter Collins
D39 7 to 12 Maths Problems That Rock! - Peter Fox
D40 7 to 12 Creative Pedagogy - Janelle O’Neill
D41 7 to 12 How Learning Mathematics in a Digital Environment Can Reduce Cognitive Load to Improve Student Outcomes - Antje Leigh-Lancaster, Vanessa Rule
D42 8 to 12 Fractals in Nature, Science, Art and Music - Michael Chapman
D43 8 to 12 Passionate Moments - Problems for Rainy Friday Afternoon - Bruce Ruthven
D44 9 to 10 Using a CAS Calculator to Teach Equation Solving - Natalie Caruso, Heather Balkin
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D46 9 to 12 Geometry and Graphing on the TI-Nspire - Tim Grabovszky
D47 9 to 12 VCAL and Outdoor Surveying - Julie Tillyer, Brian McKinley
D48 9 to 12 Slot Car and Exponential Growth (For ABC Splash) - Dr Ian Lowe
D49 10 to 12 Using Mathematica in Senior Mathematics - Craig Blake
D50 10 to 12 Using PowerPoint in a Senior Maths Class - Dana Frantz, Giovanni Liubicich
D51 10 to 12 Worthwhile CAS Calculator Use in This Year's Further Maths Exam? - Kevin McMenamin
D52 11 to 12 Developing Exam Question Skills Through Reciprocal Teaching at Sunshine College - Graeme Newman
D53 11 to 12 The Complete Bivariate Odyssey for Further Mathematics - Russell Brown, Hayley Dureau
D54 11 to 12 5 Things VCE Teachers Get Wrong During Exam Revision - Andrew Worsnop
D55 11 to 12 VCE Mathematics at Quantum Victoria - Cressida Byrne, Carlie Alexander

SESSION E: 9:00am-10:00am Friday 5th December

EK1 7 to 12 Scratch and Edgy: Teaching Algorithmic Thinking in the Middle Years and VCE - Jennifer Palisse, Dr Steven Bird
E2 0 to 2 Empowering Parents as Early Childhood Mathematics Educators - Jennifer Bowden, Rose Kelly, Bree Collins
E3 F to 3 Our Maths Rocks - Helping Students Develop Fluency in Early Number Concepts Through Fun Activities! - Johny Alagappan
E4 F to 4 Moving From Good to Great: F-4 Maths at Baden Powell College - Helen Baldock, Kaye Bourke, Beth Galea
E5 F to 4 Exploring Pattern and Algebra in the Early Years - Loretta Weedon, Catherine Epstein
E6 F to 6 Lesson Study Works For Maths: What About English? - Susie Groves, Dr Brian Doig, Kathy Palmer, Adam Bright
E7 F to 6 A PD Model for Building Capacity to Improve Outcomes in Primary Classrooms - Donald Eddington, Gem Bagdadi
E8 F to 7 YuMi Deadly in Special Schools - Jan Cavanagh
E9 F to 8 Where is the Reasoning? - Associate Professor Colleen Vale, Dr Wanty Widjaja, Dr Sandra Herbert, Dr Leicha Bragg, Dr Esther Loong
E10 F to 10 The Future of Maths Education - Adapt, Personalise and Gamify! - Michelle Kueh
E11 1 to 6 How ‘Challenging Tasks’ Improved the Way We Teach Geometry - Nadia Walker, Linda Beadle
E12 1 to 8 Mental Thinking “Using the Target Number Strategy” to Assess Students Understanding of Number - Richard Korbosky
E13 1 to 8 Improving Memory to Support Struggling Learners - Rachael Cobham, Raewyn Gainsford
E14 3 to 6 Controversial Coops.... Solving the World’s Problems One Chicken at a Time - Marielouise Phillips, Birsin Reynolds
E15 3 to 7 Decimals - What's the Point? Planning a Unit of Work for Conceptual Understanding - Jan Walker, Mark Mudge
E16 3 to 10 Maths With Attitude: An Alternative to Text-based Learning - Douglas Williams
E17 4 to 7 Draw Rotation Symmetry and Translations - Jim Cramb, Lucy Mammides
E18 4 to 7 Using MKT to Teach Proportional Reasoning - Samantha Bothe
E19 4 to 9 Developing Students’ Fraction Understanding Using Number Lines - Catherine Pearn, Dr Max Stephens
E20 4 to 9 How to Teach Decimals Better - Michael O’Reilly, Norrian Rundle
Session Summary

E21 4 to 12 Promoting and Sustaining Group Interactions - Dr Gaye Williams
E22 5 to 7 Double Division - Dr Pumadewi Sivasubramaniam, Mohd Ariff Jasmi
E23 5 to 11/VCAL Having Some Fun With Numeracy and Maths - Dave Tout
E24 5 to 12 Maths and the Adolescent Brain - Finding a Spot Between Text, Drugs and Rock 'n Roll - Robert Park
E25 7 to 9 Addressing Difficulties Students Experience with Concepts and Language Used in Numeracy Across the Curriculum - Craig Blake, Sandra Clarke-Jones, Janice Townsend
E26 7 to 10 Purposeful Teaching of Mathematics - Caroline Brown, Georgia Papadopoulos
E27 7 to 10 Made by Maths - An App Developed by MAV - Ellen Corovic, Helen Haralambous
E28 7 to 10 Inter-app-tive! Multiple Representations in Mathematics - Shelley Cross, Karleigh Hammond
E29 7 to 10 Delivering an Online, Differentiated Curriculum - Andrew Burden, Laura Higginbottom, Joennena Vaughan
E30 7 to 12 Mathematica for Mathematics Teachers - John Fitzherbert
E31 7 to 12 Reasoning and Proof in Junior High School - Dr Paul Brown
E32 7 to 12 Rock Maths Lessons With Visuals - Rodney Anderson, John Bament
E33 8 to 12 Exploring Geometric Regions Using TI-Nspire and Geogebra Technology - Roger Wander
E34 9 to 10 Integrating Mathematics and English, Seriously! - Ray Williams
E35 9 to 12 What is New on the ClassPad II - Anthony Harradine
E36 9 to 12 A Plethora of Quadratic Stuff! - Russell Brown, Hayley Dureau
E37 9 to 12 Make Your ClassPad Rock in the Classroom With These Tips and Tricks - Charlie Watson
E38 9 to 12 “Same or Different?” and Other VCE Appropriate Tasks - Damian Howison
E39 10 to 12 Differentiation Through Choice in VCE Mathematics - Jacqui Veal, Scott Anderson, Deb Robinson
E40 10 to 12 Exploring Problem Solving Using Technology Applications - Kevin McMenamin
E41 11 to 12 Units 1&2 Methods for New Teachers to the Subject - Thanh Nguyen
E42 11 to 12 Moving From Good to Great: F-4 Maths at Baden Powell College - Helen Baldock, Kaye Bourke, Beth Galea
E43 11 to 12 Exploring Pattern and Algebra in the Early Years - Loretta Weedon, Catherine Epstein
E44 11 to 12 Would You Rather? Authentic Tasks Matching Proficiencies - Chris Botheras
E45 11 to 12 How to Improve Problem Solving and Develop Thinking Routines at Your School - Peter Maher, Susan Maher
E46 12 to 12 Using TI-Nspire CAS in Specialist Mathematics - Neale Woods

SESSION F: 10:45am-11:45am Friday 5th December
FK1 K to 12 Behind and Beyond the Silicon Chip - Stéphanie Pradier
F2 0 to 2 Empowering Parents as Early Childhood Mathematics Educators - Jennifer Bowden, Rose Kelly, Bree Collins
F3 F to 2 It Grows: Patterns are One Part of Algebra for the Early Years - Associate Professor Marj Horne
F4 F to 4 Moving From Good to Great: F-4 Maths at Baden Powell College - Helen Baldock, Kaye Bourke, Beth Galea
F5 F to 4 Exploring Pattern and Algebra in the Early Years - Loretta Weedon, Catherine Epstein
F6 F to 6 Would You Rather? Authentic Tasks Matching Proficiencies - Chris Botheras
F7 F to 6 How to Improve Problem Solving and Develop Thinking Routines at Your School - Peter Maher, Susan Maher
F8 F to 6 Teach Maths for Understanding at Primary Level - Dr Ian Lowe
F9 F to 7 Developing Geometric Reasoning Abilities Through Visualisation - Dr Rebecca Seah
F10 F to 7 Why Maths Hurts - Rhiannon Lowrey
F11 F to 10 Essential Assessment - Australian Curriculum and AusVELS Assessment and Curriculum - Andrew Spitty
F12 F to 10 Getting the Most from Australia’s Premier Online Resource, Cambridge HOTmaths - Victoria Cook
F13 2 to 8 Card Games in the Mathematics Classroom - Richard Korbosky
F14 3 to 6 Loving Maths! A Self-directed Learning Approach - Stephanie Nitschke, Paul Noonan, Dena Reddan
F15 3 to 7 Rock Around the Clock - YuMi Style - Jan Cavanagh
F16 3 to 8 Making Connections in Patterns and Algebra - Maria Quigley
F17 3 to 9 The Role of Challenging Mathematical Tasks in Creating Opportunities for Student Reasoning - Aylie Davidson
F18 3 to 10 Aligning Values, Energising Mathematics: How Expert Teachers Do It - Dr Wee Tiong Seah
F19 4 to 9 Teaching for Numeracy Across the Curriculum in Primary and Secondary Classrooms - Associate Professor Vince Geiger, Anne Bennison, Professor Helen Forgasz, Sarah Batch, Chris Leal, Leanne Reid, Amy George, Karissa Cooke, Belinda Redden

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F20  5 to 8  Measurement and Technology - Using Data Loggers - Daniel Avano, Michael de Zilva
F21  5 to 9  Speedy Maths - A Lesson In Fluency - Thao Huynh, Victor Vu, Tim Purcell
F22  5 to 10 All Students Learn Mathematics Better When the Work is Challenging for Them - Professor Peter Sullivan
F23  6 to 12 Maths Rocks Geography - Christina Wrigley
F24  7 to 9  Teaching Negative Numbers with 100% Success!! - Helen King
F25  7 to 10  STEM in Mathematics - Thomas Yeo
F26  7 to 10  Made by Maths - An App Developed by MAV - Ellen Corovic, Helen Haralambous
F27  7 to 10  Real Teachers Using Mangahigh to Improve Numeracy - Bryce Dermody, Karen Martin
F28  7 to 11  Using Items From the PISA International Mathematics Assessment in Teaching - Professor Kaye Stacey
F29  7 to 12  Whiteboarding in the Mathematics Classroom - Dietmar Schaffner, Maria Schaffner
F30  7 to 12  Assessment FOR Learning in Secondary Maths, Without Take-Home Marking - Heather Ernst
F31  7 to 12  Mathematica: Play, Create, Learn and Problem-solve with Tessellations Using the Graphics Primitive - Ian Wilson
F32  7 to 12  From Symmetry to Pythagoras: Teaching Geometric Proofs in AusVELS - Joel Smith, Dr Rebecca Ryan
F33  7 to 12  Mathematics of Rock Band Photography - Paul Pascoe
F34  8 to 12 Fractals in Nature, Science, Art and Music - Michael Chapman
F35  8 to 12  Questioning Probability and Statistics - Ray Cross
F36  9 to 10  Roller Coaster Gradients - Damian Howison
F37  9 to 10  Lesson Ideas on the Use of TI-Nspire - Caroline Tng, Tiowchoo Kwee
F38  9 to 12  A Plethora of Quadratic Stuff! - Russell Brown, Hayley Dureau
F39  9 to 12  Learning Function Transformations Using TI-Nspire Graphing Calculator - Yingru McCaughey
F40  10 to 12  Maths for Apprenticeships, Further Education and/or Work - Andrew Spencer
F41  10 to 12  Rock Your ClassPad with BYO Functions and Programs - Charlie Watson
F42  10 to 12  Worthwhile CAS Calculator Use in This Year’s Further Maths Exam? - Kevin McMenamin
F43  11 to 11 Units 1&2 Maths Methods for New Teachers to the Subject - Thanh Nguyen
F44  11 to 12  On Geometric Locus - Hussein Tahir
F45  11 to 12  VCE Further and General Mathematics from 2016 - Professor Peter Jones
F46  11 to 12  Pearson Lightbook - Supporting Good Teaching and Learning in Upcoming Senior Mathematics Courses - Antje Leigh-Lancaster, Tim Carruthers

SESSION F-G:  10:45am-1:10pm Friday 5th December

F-G1  F to 6  Nine & Over: Adventures in Place Value - Douglas Williams
F-G2  F to 8  Maths Rocks or Maths Sucks - Rob Vingerhoets
F-G3  2 to 10 Investigations and the Proficiency Strand - Derek Holton
F-G4  4 to 12 Hands-on Workshop for Mathematica Beginners - Craig Bauling
F-G5  7 to 12 So This is Your First Year of Teaching... - Rob Vermay
F-G6  7 to 12 Creating Math Courses with iTunes U - Clare Rafferty, Kristi Usher, Donna Mackinnon
F-G7  9 to 11 Linear, Exponential and Logarithms in 10 and 10A - Anthony Harradine

SESSION G:  12:10pm-1:10pm Friday 5th December

GK1  7 to 12 The Continuing Fractal Mathematics Revolution - Professor Michael Barnsley, Louisa Barnsley
G2   F to 2   It Grows: Patterns Are One Part of Algebra for the Early Years - Associate Professor Marj Horne
G3   F to 4   Smorgasbord of Maths - What’s on the Menu Today? - June Penney, Jenny Dockeary, Cathy Davidson
G4   F to 4   The Maths Online Interview Still Rocks! - Pam Hammond
G5   F to 6   How to Improve Problem Solving and Develop Thinking Routines at Your School - Peter Maher, Susan Maher
G6   F to 6   All Students Learn Mathematics Better When the Work is Challenging for Them - Professor Peter Sullivan
G7   F to 6   Working with Number Strategies - Neda Grose
G8   F to 8   iPads as a Mathematics Learning Tool - Fiorella Soci, Natalie Erwin
G9   F to 10 Money Rocks the World - Shane O’Connor
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G10  F to 12  A History of Coercion: The Military Influence on Maths Education - Dr Jude Ocean
G11  F to 12  Warping the Australian Mathematics Curriculum - Michael O’Connor
G12  1 to 8  Improving Memory to Support Struggling Learners - Rachael Cobham, Raewyn Gainsford
G13  3 to 8  Using Card Games to Promote Fluency in Basic Number Facts - Linda Baron
G14  3 to 8  Making Connections in Patterns and Algebra - Maria Quigley
G15  3 to 8  Making Mathematics Visual - The Model Method That Improves Problems Understanding and Fosters Pre-algebraic Thinking - Vei Li Soo
G16  4 to 8  Lets Make Mathematics Rock With Problem Solving - Jill Peterson, Brenda Walker, Sue Bullick
G17  4 to 10  An In-depth Look at the Mathematics Curriculum of Sunshine College - Yvonne Reilly, Jodie Parsons
G18  5 to 8  Measurement and Technology - Using Data Loggers - Daniel Avano, Michael de Zilva
G19  5 to 9  Fractional Knowledge as a Signpost to Algebraic Readiness - Catherine Pearn, Dr Max Stephens
G20  5 to 9  Speedy Maths - A Lesson in Fluency - Thao Huynh, Victor Vu, Tim Purcell
G21  5 to 10  When Are We Going To Use This? - Adjunct Professor Mike Clapper
G22  5 to 12  The Joy of Informatics - Jan Honnens
G23  5 to 12  Stop Shotgun Teaching - Start Differentiated Learning - Anthony Nunan
G24  5 to 12  National Sport Museum Resources - Dr Ian Lowe
G25  7 to 10  Mathematics of Rock Music - Adam Kruger, Scott Rumble
G26  7 to 10  ClassPad as a Learning Tool - Alastair Lupton
G27  7 to 10  From Geometry to Algebra with Polygons - Andrea van Graan
G28  7 to 10  How to Learn Math - Professor Jo Boaler MOOC (Stanford) - Caroline Brown, Georgia Papadopoulos
G29  7 to 10  An Assessment Framework for Mathematics Teachers - Rohani Mohamad
G30  7 to 10  Need to Rock? Take a Tablet! - Brian Hodgson
G31  7 to 11  Using Items From the PISA International Mathematics Assessment in Teaching - Professor Kaye Stacey
G32  7 to 11  The Australian TI Activities Website - Neale Woods
G33  7 to 12  Is the iPad Just Another iFad for the Maths Classroom? - Bryn Humberstone, Chris McCarty
G34  7 to 12  From Symmetry to Pythagoras: Teaching Geometric Proofs in AusVELS - Joel Smith, Dr Rebecca Ryan
G35  7 to 12  Supporting Out-of-field Teachers of Mathematics - Dr Colleen Vale, Dr Brian Doig
G36  7 to 12  Trisection of Angle with Origami - Karim Noura
G37  7 to 12  Transition Program Solutions - Peter Fox
G38  7 to 12  How Learning Mathematics in a Digital Environment Can Reduce Cognitive Load to Improve Student Outcomes - Antje Leigh-Lancaster, Vanessa Rule
G39  8 to 12  Passionless Moments - Problems for Rainy Friday Afternoon - Bruce Ruthven
G40  9 to 10  Investigating Trinomials with Integer Roots - Ray Williams
G41  9 to 11  The Curvature of Linear Functions - Shane Dempsey, Chelsea Carter
G42  10 to 12  Worthwhile CAS Calculator Use in This Year’s 2nd Methods Exam? - Kevin McMenamin
G43  11 to 12  Teaching the Principle of Mathematical Induction in the Specialist Classroom - Andrew Woolley
G44  11 to 12  Using Notes and Programs in TI-Nspire for Fully Automated Solutions of Mathematical Methods CAS Exam 2 Questions - Mehmet Altundal

SESSION H:  2:10pm-3:10pm Friday 5th December
HK1  7 to 12  Rock or Sand: What International Surveys Tell Us About Australians’ Mathematical Foundations - Dave Tout, Professor Kaye Stacey, Ross Turner
H2   F to 4   The Maths Online Interview Still Rocks! - Pam Hammond
H3   F to 6   Implementing Problem-solving at Eagle Point Primary School: A Whole School Approach - Anna Duncan, Natalie Clarke, Dr Gaye Williams
H4   F to 6   Working with Number Strategies - Neda Grose
H5   F to 6   Engaging and Challenging Mathematically Gifted Students in the Multi-ability Classroom - Penny Willoughby
H6   F to 8   iPads as a Mathematics Learning Tool - Fiorella Soci, Natalie Erwin
H7   F to 10  Money Rocks The World - Shane O'Connor
H8   F to 12  Video Animations - A Fun Way to Teach and Learn Mathematics - Carmen Popescu-Rose
H9   F to 12  A History of Coercion: The Military Influence on Maths Education - Dr Jude Ocean
H10  5 to 8  Catering for Mathematically Talented Middle School Students: The Peculiar Puzzles of Professor Fibbernacho - Anne Eastaugh, Meg Pini

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H11 2 to 10  Kids & Cup Cakes & Poster Puzzles - Douglas Williams
H12 3 to 8  Using Card Games to Promote Fluency in Basic Number Facts - Linda Baron
H13 4 to 7  Draw Rotation Symmetry and Translations - Jim Cramb, Lucy Mammides
H14 4 to 9  Geometry in Art and Design: Escher, the MATHOMAT and the Australian Curriculum
- Susie Groves
H15 4 to 12 Developing Strategies for Computational Consistency Across Years 4-12 with Wolfram Research - Craig Bauling
H16 4 to 12 More Down to Earth Mathematics - Leigh Thompson, Jacqui Kerr
H17 5 to 10 MS Excel Skills for What Graph to Use When - Iqbal Hossain, Rudy Birsa
H18 5 to 10 Every Student Learning Something Different - Calm or Chaos? - Jacqui Lee, Dr Jonathan MacLellan, Brad Gibbs
H19 5 to 10 Changing the Way You Teach - Our Experience of Differentiation Using Maths Pathway - Jenny Sutton, Deborah Murrell
H20 5 to 10 Triple Maths Learning for the Cost of a Textbook - Justin Matthis, Richard Wilson
H21 5 to 10 Creating Formulas is More Important Than Using Them: Techniques to Teach “Reasoning” - Michaela Epstein, Andrew Worsnop
H22 5 to 10 Informatics - Adjunct Professor Mike Clapper
H23 5 to 10 Mathematics at Quantum Victoria - David Smith, Joel Willis
H24 5 to 12 Mathemagical Marvels to Liven Up Lessons - Andrew Wrigley
H25 5 to 12 Mathematical Fibre Art Rocks - Dr Katherine Seaton
H26 6 to 9 Developing Algebraic Thinking: Providing New Tools to Understand Mathematical Relationships - George Booker
H27 6 to 10 A Tale of Two Activities - Christine Lenghaus
H28 7 to 8 Differentiation-making a Difference at Mansfield Secondary College - Anthea Wood, Emma Griffith, Bruce McInnes
H29 7 to 10 Teaching Mathematics Through Geometry: An Integrated Approach Using MATHOMAT and SKETCHPAD Software - John Lawton, Michael O’Connor
H30 7 to 10 More Problem Solving Please! - Kelly Sharp
H31 7 to 10 Creating AusVELS Aligned Assessments Using Socrative - Kristie Green, Chris Hyde
H32 7 to 10 Rock Mathematics Pedagogy with Some Bubble and Squeak: An Eclectic Approach - Rama Ramakrishnan
H33 7 to 12 Teacher Questioning in Mathematics Classes in China and Australia - Lianchun Dong
H34 7 to 12 Creative Pedagogy - Janelle O’Neill
H35 8 to 11 Mathematica Start Up at 10 and Before - Lauren Wood, Dr David Leigh-Lancaster, Rohan Barry
H36 8 to 12 Exploring Geometric Regions Using TI-Nspire and Geogebra Technology - Roger Wander
H37 9 to 10 Enriching the Mathematics Classroom: A Visit to the Virtual Island - Minh Huynh, Dr James Baglin
H38 9 to 10 Using a CAS Calculator to Teach Equation Solving - Natalie Caruso, Heather Balkin
H39 9 to 11 The Curvature of Linear Functions - Shane Dempsey, Chelsea Carter
H40 10 to 12 Pizza and Probability - Damian Howison
H41 10 to 12 Using PowerPoint in a Senior Maths Class - Dana Frantz, Giovanni Liubicich
H42 11 to 12 Popcorn Making in Maths Methods - Andrew Woolley, Paul Barron
H43 11 to 12 School Maths to Uni Maths for Engineering and Science - Dr Mary Coupland
SESSION DETAILS
SESSION A: 11:10am-12:10pm Thursday 4th December

AK1 Engaging Students Through Games
Keynote

Michael Woods - Media Saints, VIC

I love making educational games. I’ll be honest, I’m not an academic - quite the opposite. Though have had some great opportunities to work on some awesome apps, games, films and technology over the past few years. I’m keen to chat about some processes we use for designing creative stuff, how to evaluate technology, how to improve reward systems and how to use games in unique ways. Hopefully together we might come up with a few ideas to get students excited using some simple gaming ideas. Put your hand up, talk to me, I’m not good at maths so will need your help.

Hi, my names Michael.
I started my career after high school, running video game tournaments and broadcasting them on the internet. When we started, professional gaming was done in LAN cafés & scout halls, though we had a vision to take it into the TV studio and put it on show for the public. Over the 5 years we around 20 tournaments and gave away about $100,000 in cash and prizes to Aussey gamers. Today I am Co-founder & Creative Director at Media Saints.

We make educational games, websites, apps, films, adverts and lots more. Our most rewarding projects have been Knowledge Quest, as side scrolling action adventure game that helps high school students learn English. An awesome arts app - Create Explore Learn at The Royal Children’s Hospital. The anatomy iPad game Whack A Bone. A children’s interactive storybook Fruitoria and sending Big Ted to the moon with ABC PlaySchool games was awesome. I’ve also spent time as a games / tech journalist and columnist for MX Newspaper. Worked in government investment at Film Victoria. I’ve had the privilege to talk at conferences around the world about games, technology & Generation Y. I recently received a fellowship to the Australian CEO Institute, am an Associate Fellow of the Australian Institute of management and been lucky enough to be listed in the Australian 30 under 30 a few times. My passion is film making and music and spending my weekends gardening and BBQing (If I’m not working).

AK2 An Overview of the Revised VCE Mathematics Study Design
Keynote

Dr David Leigh-Lancaster - Victorian Curriculum & Assessment Authority (VCAA), VIC
Dr Michael Evans - Australian Mathematical Sciences Institute (AMSI), VIC

This session will provide an overview of the revised VCE Mathematics study design covering key developments across the study as a whole, and for each of the individual studies, Foundation Mathematics, General Mathematics, Further Mathematics, Mathematical Methods and Specialist Mathematics.

Dr David Leigh-Lancaster is the Mathematics Curriculum Manager at the Victorian Curriculum and Assessment Authority (VCAA), a former Head of Mathematics, and taught secondary mathematics for around 20 years. David has been extensively involved in curriculum development, teacher professional learning, resource development, examination setting and marking and the development and verification of school-based assessment in mathematics. He has longstanding interests in mathematical logic, model theory, computability theory, foundations of mathematics, history and philosophy of mathematics and mathematics education, the nature of mathematical inquiry, curriculum design and teaching, learning and assessment in mathematics.

Dr Michael Evans was responsible for the ICE-EM Mathematics program at the Australian Mathematical Sciences Institute. The program produced a set of textbooks for the Australian curriculum in mathematics and produced many freely available online materials for teachers some of which are very suitable for use with the forthcoming study designs. He currently holds the honorary position of senior consultant at AMSI. He has taught in secondary schools for many years and is currently teaching at Brighton Grammar School and Scotch College. He has been involved with the Australian Mathematics Trust for many years. He has worked with both ACARA and the VCAA in the area of curriculum development.
A3  Connecting the Dots  
**Workshop**  Years F to 3  
Anne Milburn - Cognition Education, Auckland, New Zealand  
Christine Graham - Cognition Education, Auckland, New Zealand  
Pattern and structure provides the basis for Mathematical thinking. When pattern and structure is not developed and embedded then children do not have a framework to build their thinking on. Pattern and structure needs to be explicitly taught. Making connections for children, will assist with their understanding of the key concepts. This practical hands-on workshop will provide a range of experiences and examples that can be used to develop pattern and structure.  
*Repeated as B2*

A4  Are You in Shape for Geometry?  
**Workshop**  Years F to 6  
Nancy Surace - Catholic Education Office, Melbourne, VIC  
Ainslie McIntosh - Catholic Education Office, Melbourne, VIC  
This workshop will explore the content area of geometry as a vehicle for planning units of work that build students’ conceptual understanding. Using AusVELS Mathematics Curriculum, we will look at unpacking key mathematical ideas, common misconceptions, assessment data, rich activities and ways to differentiate them as key elements in developing a unit of work.  
*Not repeated*

A5  Teaching Addition and Subtraction Mental Computation Strategies Through a Whole School Approach (F-6)  
**Workshop**  Years F to 6  
Bern Long - St Carlo Borromeo Primary School, VIC  
Angela Rogers - RMIT University, VIC  
The intention of this workshop is to provide an opportunity for classroom teachers to develop an in-depth knowledge of the teaching and learning of addition and subtraction mental computation strategies from F-6. Teachers will be shown quality resources and activities to assist develop these mental computation skills and research-based evidence will be used to reinforce their importance. The session will also highlight practical ways to develop mental computation through all strands of the Australian Curriculum.  
*Repeated as B3*

A6  A PD Model for Building Capacity to Improve Outcomes in Primary Classrooms  
**Workshop**  Years F to 6  
Donald Eddington - Craigieburn South Primary School, VIC  
Gem Bagdadi - Craigieburn South Primary School, VIC  
Do you want to build the capacity and confidence of staff to teach Mathematics and develop a consistent, whole school approach? This workshop provides participants with a PD model that includes an approach and a range of strategies and resources for doing just that. The session provides a balance between current research into the teaching of Mathematics and practical classroom applications and activities. Also to support teachers in planning for students working below, at and above the expected level, participants will be provided with a Curriculum Map that clearly shows how Mathematics concepts can be aligned and developed over time.  
*Notes: Please bring 2 different coloured pens and notebook.*  
*Repeated as E7*

A7  Teaching and Loving Mathematics in a Mixed Ability Classroom  
**Workshop**  Years F to 6  
Peggy Ashton - La Trobe University, VIC  
Jennifer Vincent - NMIT, VIC  
This workshop will outline strategies for developing a learning environment that can support students’ access and success in mathematics. We will also explore ways of nurturing a classroom climate where learning mathematics is fun. A CD of activities will be provided.  
*Repeated as B5*
A8 Experiences Within the Classroom - The Use of Different Genres to Stimulate Learning
Workshop

Stephen Lewis - Maths Consultant, VIC
Amanda Salomone - Avondale Primary School, VIC

Steve and Amanda will present on their experiences within the classroom using concrete materials to stimulate higher order thinking skills, thus enabling students to drive their own level of learning. We will share our experiences in the classroom using literacy as a way of teaching mathematics. Using different types of genres to stimulate learning and to use this as evidence for assessment.

Notes: Bring a laptop for note taking.
Not repeated

A9 Rich Tasks: The Relationship Between Higher Order Thinking Skills and Problem Solving
Workshop

Kelly Utting - Hillsmeade Primary School, VIC

In this workshop, participants will explore the notion of using rich tasks in:
◊ Enriching mathematical experiences to provide all students with opportunities to explore, engage with, and communicate mathematical ideas.
◊ Offering students challenging activities and resources which can develop mathematical thinking and problem solving skills.
◊ Exploring the use of mathematics in engaging and meaningful contexts.
◊ Using rich tasks to foster a community where students and teachers collaborate and support each other in developing their understanding and skills and where effort and achievement is celebrated.

Repeated as B8

A10 Valuable Moderation in a Mathematics Classroom
Workshop

Kathryn Palmer - Every Child Counts Numeracy Consultants, VIC

A myth in mathematics teaching is that you can only assess students if you give them a written test. This workshop explores current assessment practice and highlights the importance of using rich tasks to assess student mathematical thinking and therefore inform your teaching. As a teacher you have to be able to identify in a short time where students are at and then what you can do to support them. This hands-on workshop will support participants to use rich tasks to moderate student work linked to the proficiency strands in the Australian Curriculum.

Not repeated

A11 The 0.67 Effect
Lecture

Michael Portaro - Melton Primary School, VIC
Sheree Lucas Portaro - VIC
Jaynay Miller - VIC

Thanks to Hattie, we can gauge not only the relative effectiveness of almost every educational intervention under the sun but we can compare these interventions on an absolute scale of effect size. Hattie found that “Vocabulary Programs’ had an effect size of 0.67.” Melton Primary School (MPS) have embedded a whole school systematic approach to improving the development of mathematical vocabulary. MPS uses Marzano’s research on “Building Academic Vocabulary” to create what lives and breathes in each classroom and is now translating to an improvement in student learning outcomes. Presenters of this session will guide you through the implementation stages of the program then onto to the activities and strategies used to support it. Session One will focus on the implementation of this initiative. Session Two will focus on classroom strategies to support the initiative.

Repeated as B10

A12 Keeping up with Kurriculum!
Lecture

Janine McIntosh - Australian Mathematical Sciences Institute (AMSI), VIC
Michael O’Connor - Australian Mathematical Sciences Institute (AMSI), VIC

Keeping up-to-date with ideas for teaching maths and having enough time for professional reading to top-up content knowledge are two key components to developing a personal mathematical identity for teachers. In 2014 AMSI supported over 50 schools in regular PD sessions and school visits. For participating teachers, a resource-based website has become a key component of this support. In this session we describe the new AMSI resource portal www.calculate.org.au, now open to all schools, which links professional reading with classroom ideas, online PD and collegial chats about maths.

Notes: A BYO web-enabled and connected device will be useful in this session.
Not repeated
A13 MAV Maths Talent Quest (MTQ) - Mathematics Investigation Projects Workshop

June Penney - Bacchus Marsh Primary School, VIC
Kelly Gallivan - St Kevin’s College, VIC

The Maths Talent Quest (MTQ) continues to be an important component of the MAV’s student activities program. It has been running for over 30 years and involves students engaging in personally chosen ‘real life’ maths investigations. The categories include all Primary and Secondary year levels and the investigations may be performed by individuals, groups or classes. Certificates and prizes are awarded while some investigations are also selected to represent Victoria in the Asia Pacific MTQ. 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 to discuss process, ideas and to view past investigations.

Not repeated

A14 Posing Mathematical Problems Using Sophisticated Picture Books Workshop

Linda Cheeseman - Cognition, New Zealand
Anuja Singh - Auckland Ministry of Education, New Zealand

Join us in practical learning conversation based workshop investigating how to develop explicit links between Literacy and Mathematics. Find out exciting ways to engage your students by combining key mathematical language and literacy skills along with the development of essential mathematics concepts. We will look at a range of interactive mathematical problem solving activities generated from favourite sophisticated picture book stories.

Repeated as B14

A15 Teaching as Inquiry in Mathematics Workshop

Louise Miller - Cognition Education, New Zealand
Gillian Kissling - Cognition Education, New Zealand

Teaching as inquiry is a mechanism for on-going professional learning and productive change to our practice. Incorporating digital technologies as part of an inquiry offers new ways of learning, teaching and engaging with teachers, students and Whanau. It also offers opportunities to review what is possible in terms of content and pedagogical development as well as allowing us to examine challenges within the inquiry process. Through this analysis, practical approaches to making inquiry manageable and meaningful are developed.

Repeated as C18

A16 Nurturing Number Sense Workshop

Dr Paul Swan - WA
Dr Derek Hurrell - University of Notre Dame, WA

In this session Paul and Derek present a series of repeatable and adaptable formats for developing flexible thinking in number. All formats will involve readily available materials or no materials at all. The difficulty level of the formats may be simplified or made more challenging to help cater for the wide range of abilities of children within the one class.

Not repeated

A17 Dynamic Digits Workshop

Deborah Reeves - Waikato University, New Zealand
Alison Howard - Cognition Education, Auckland, New Zealand

Let’s examine the big mathematical ideas of place value. In this workshop we will explore ways to develop place value understanding through use of equipment, games and rich tasks when working with students. The focus is on early numeracy stages and beyond.

Repeated as B16
A18  Catering for Mathematically Talented Middle School Students: The Peculiar Puzzles of Professor Fibbernacho
Workshop  Years 5 to 8
Anne Eastaugh - G.A.T.E.WAYS, VIC
Meg Pini - G.A.T.E.WAYS, VIC
Commercial Presentation
There are students in our classrooms who have unusually strong reasoning abilities in mathematics; they quickly master new concepts and skills that exceed those of their classmates as well as year-level expectations. How do we provide adequate challenges for these students so that we can meet their needs? This workshop will consider research-based options and provide an example of a resource that can be used to nurture mathematical talent in middle school students. You will be introduced to the "The Peculiar Puzzles of Professor Fibbernacho" - a resource developed from a number of G.A.T.E.WAYS (Gifted and Talented Education) programs.
Repeated as H10

A19  Supporting Low Achieving Student’s Motivation and Engagement in Mathematics
Workshop  Years 3 to 6
Amanda Ferguson - University of Waikato, New Zealand
Helen Rodgers - University of Waikato, New Zealand
Helping low-achieving students to acquire mathematics proficiency requires a variety of effective instructional practices that support student’s motivation and interest in maths lessons. In this workshop we will be discussing the importance of problem-solving to engage mathematical thinking and look at how rich tasks can be used and adapted to effectively meet the needs of learners. Examples of student's work will be shown and we will explore a range of activities and materials that can be used to support low achieving students operating at New Zealand Framework Stages 4-6.
Repeated as B19

A20  Decimals - What’s the Point? Planning a Unit of Work for Conceptual Understanding
Workshop  Years 3 to 7
Jan Walker - Catholic Education Office Melbourne, VIC
Mark Mudge - Catholic Education Office Melbourne, VIC
Through the lens of decimals, this workshop will explore the process of how to plan a unit of work that builds students' conceptual understanding. The key mathematical ideas which underpin the learning and teaching of decimals will be investigated in line with the AusVELS Mathematics Curriculum. Common misconceptions experienced by students, assessment data to inform planning and a range of tasks which cater for differentiation, will be addressed as key elements in planning for conceptual understanding.
Repeated as E15

A21  Language Difficulties in Mathematics
Workshop  Years 3 to 7
Robyn Holt - University of Waikato, Hawkes Bay, New Zealand
There is a range of language issues that can affect a child’s progress and achievement in mathematics. It is important teachers are aware of the problems a child may be having in making connections between language, symbols, pictures and real life situations. This workshop will investigate some of these issues and offer ideas to assist teachers in helping the child overcome these specific mathematics related language difficulties.
Repeated as B21

A22  Using MKT to Teach Proportional Reasoning
Workshop  Years 4 to 7
Samantha Bothe - Victoria University, VIC
The Australian Curriculum anticipates that all students will “benefit from access to the power of mathematical reasoning and learn to apply their mathematical understanding creatively and efficiently”. How can we effectively achieve this? Through the Mathematics Knowledge for Teaching (MKT) model this workshop will explore practical activities to use in the teaching of proportional reasoning.
Repeated as E18
A23 Using Online Collaborative Learning Spaces in Mathematics Education
Workshop
Duncan Symons - The University of Melbourne, VIC
Years 5 to 6
There has been much debate about integrating technology into the mathematics classroom. This workshop presents an asynchronous online collaborative learning environment. Within this environment upper primary students have participated in mathematical problem solving tasks. In project groups of four to five students have engaged in online discussion, responded and provided feedback to each other and ultimately provided their solution to one mathematical problem solving task per week for a period of ten weeks. Participants in the workshop will be introduced to the collaborative space and be given the opportunity to work through a number of the problems.
Notes: Please bring your laptop.
Repeated as C26

A24 Fun With Dynamic Geometry in Pre-schools and Primary Schools
Lecture
Dr Pumadevi Sivasubramaniam - Teacher Education Institut Raja Melewar Campus, Malaysia
Years 5 to 7
This presentation will describe how a graphing calculator project using dynamic geometry was planned and executed for pre-school and primary school students with undergraduate teacher trainees as facilitators. It also describes the technological skills and higher order thinking skills aimed to be developed through the project and the response from the pre-school and primary school students. It also includes the training and outcome of the training provided for the facilitators to equip them with the necessary skills to conduct the project.
Not repeated

A25 Anything Can Mean Anything Else: Playing With Codes. A Participatory Workshop Including Working in Small Groups
Workshop
David Demant - VIC
Commercial Presentation
Years 5 to 7
There are many types of codes, some secret. We examine one type, which uses just two different things; like the letters 'a' and 'b', or the numbers '1' and '0'; in fact any two things. We'll make codes with Neenish tarts, magnetic discs, cups, coats, people... and model cars arranged to send a message to the sky. On the way, we delve into history and tell a tall story or two. Cross-curricula: history, maths, cooking, science, photography. Strands: problem solving, number & patterns, reasoning, understanding. Available to schools in 2015; fee to be negotiated.
Repeated as B27

A26 Problem Solving
Workshop
Daniel Avano - Museum Victoria/Scienceworks, VIC
Michael de Zilva - Museum Victoria/Scienceworks, VIC
Years 5 to 8
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 (online maths programs, hire kits and student workshops) available from Museum Victoria.
Repeated as B29

A27 Fractional Knowledge as a Signpost to Algebraic Readiness
Workshop
Catherine Pearn - The University of Melbourne, VIC
Dr Max Stephens - The University of Melbourne, VIC
Years 5 to 9
Arithmetical thinking about fractions alone does not help students to make the important transition to algebraic thinking in the middle years. Students need to become confident in thinking multiplicatively about fractions – not just additively. This presentation will discuss a screening test for the middle years that identifies how well students can use relational thinking and effective representations involving fractions. We will show why fractional competence is important for algebraic readiness, and how it can be identified and developed in the middle years.
Repeated as G19
A28  When Are We Going To Use This?
Lecture  
Adjunct Professor Mike Clapper - Australian Mathematics Trust, ACT  
This presentation explores ways in which we might answer this question in a practical way, emphasising the dangers of maths teaching becoming an exercise in technical skill development at the expense of problem solving and problem formulation. Although there is a philosophical element to this discussion, the emphasis is on practical pedagogies which engage students in the mathematical narrative.  
Repeated as G21

A29  Creating Formulas is More Important Than Using Them: Techniques to Teach “Reasoning”
Lecture  
Michaela Epstein - Hume Central Secondary College, VIC  
Andrew Worsnop - VIC  
Every maths classroom should be teaching mathematical ‘Reasoning’. As well as being a required proficiency strand in the Australian Curriculum, Reasoning facilitates the development of a deeper conceptual, in addition to holistic, understanding of mathematics. Key to this is the support given to students in creating and exploring formulas rather than solely memorising such mathematical shortcuts. In this session Andrew and Michaela present concrete strategies for embedding Reasoning into your classes so that it isn't just another item burdening an already crowded curriculum. Instead, Reasoning is a powerful way to increase students' long-term recall and ability to handle non-routine problems.  
Repeated as H21

A30  Triple Maths Learning for the Cost of a Textbook
Lecture  
Justin Matthys - Maths Pathway, VIC  
Richard Wilson - Maths Pathway, VIC  
Commercial Presentation  
What would you say if there was an easy way to triple maths results and save teachers time - and it cost no more than your current text book? Two Aussie teachers have made this a reality by doing three things. First, precisely identifying each student's learning needs. Second, providing high-quality personalised instruction and assessment. And third, enabling any teacher to do this in their classroom with an easy-to-use, comprehensive online system. Dozens of innovative, ICT-equipped schools are already taking advantage of this new maths learning solution, and are achieving phenomenal results.  
Repeated as H20

A31  Saving the Planet with Mathematics: Exploring Issues of Sustainability Through the Mathematics Curriculum
Lecture  
Associate Professor Judy Anderson - The University of Sydney, NSW  
This presentation will use population statistics to demonstrate the potential to develop mathematics learning tasks for students using a range of online resources. Focusing on problem solving, the tasks will also address the cross-curriculum priority of sustainability. Participants will have the opportunity to explore a range of resources to evaluate their efficacy for promoting engagement with social issues.  
Not repeated

A32  A Day at the Museum (of Mathematics)
Lecture  
Andrew Wrigley - Somerset College, QLD  
The Museum of Mathematics in New York is the only Maths Museum in North America. It is a cornucopia of Mathematics designed to inspire the minds of students (and adults). Enjoy a journey through some of the exhibits, ideas and innovations which can be readily transferred to the classroom.  
Not repeated

A33  Blasts from the Past - Engaging Activities in Maths
Workshop  
Ken Ellis - Maths Consultant, VIC  
Rick Swan - Maths Consultant, VIC  
With 19 years consulting experience in New York and 50 years teaching experience between them, Rick and Ken will offer their observations of some common misconceptions and weaknesses of students and teachers noticed in Victorian Schools, while also challenging participants with some of their favourite Puzzles and Problem-Solving activities.  
Repeated as D29
A34  Maths and the Adolescent Brain - Finding a Spot Between Text, Drugs and Rock n Roll
Lecture
Robert Park - Consultant, VIC

Unfortunately, a large number of the students we teach have had unrewarding experiences with maths. In this session we will reflect on commonly used strategies by exploring current research about the way the brain learns maths. We’ll explore why each is important through the lens of how the adolescent brain learns. This session will clarify what differentiation and why it is important. Participants will find it easier to make decisions on the types and frequency of strategies used to learn concepts and practice them and be exposed to a range of strategies and resources to help design brain-specific lessons.

Repeated as E25

A35  SpyClass: Learn Mathematics Through Online Gaming
Workshop
Shirly Griffith - Jacaranda, VIC
Evan Curnow - Jacaranda, VIC
Shirley Sharpley - Jacaranda, VIC

SpyClass is Jacaranda’s NEW online game combining comic book-style narrative with problem-based learning to allow mathematics students to hone their problem solving skills in an exciting and immersive environment. By completing a series of tasks, the student assists the games’ protagonists; three teenage spies named Dan, Jesse and Toby, to fulfil a range of missions set in exotic locales. SpyClass transports students beyond the classroom while giving them challenges that are firmly based on the Australian Mathematics Curriculum. All attendees will receive free access to SpyClass 7 or SpyClass 8 for their students for one year.

Notes: Bring a device (laptop or tablet).
Not repeated

A36  Juggle and Lift!! Numeracy and Mathematics
Workshop
Justine Johnston - Hume Central Secondary College, VIC
Jessica Macrae - Hume Central Secondary College, VIC

Struggling students? Do you juggle teaching maths AND lifting the numeracy skills of your students? Resources, programs, approaches and strategies that we have implemented from Year 7 to 9 will be presented in this session to show how we have successfully lifted numeracy skills of students. This includes; Scaffolding Numeracy in the Middle Years (Year 7), Number Passport for school and home, mental computation, games and a range of resources/strategies utilised by staff to support numeracy development.

Repeated as B36

A37  Inter-app-tive! Multiple Representations in Mathematics
Workshop
Shelley Cross - St Hildas School, QLD
Karleigh Hammond - St Hildas School, QLD

Interactive using APPS to create mental images = inter-app-tivity! Developing generalisations to use as tools for abstract thinking is one of the key facets of mathematics. Our short, simple animations engage our students and create mental images enabling deeper understanding of mathematical concepts, equipping them to journey more confidently into the abstract world of mathematics. We share our experiences as we delve into ways of making mathematics meaningful in an age where advances in technology constantly open exciting new opportunities. You will be given the tools to create innovative and pedagogically sound tasks for your classroom.

Notes: Please bring an iPad to the session.
Repeated as E29

A38  From Geometry to Algebra with Polygons
Lecture
Andrea van Graan - St Mark’s Anglican Community School, WA

This session will look at how facilities on the CAS calculator and the TI-Nspire Navigator can be used to help students investigate internal and external angles of polygons. Interactive notes and spread sheets will be used to help students discover the rules and patterns involved.

Repeated as G27
If you are looking for a powerful and effective way to align your assessments with AusVELS while also providing immediate student performance feedback, look no further than Socrative. Socrative is an engaging and versatile piece of software that is freely available to use on any platform including all browsers, tablets and smartphones. In this workshop you will create an assessment task, using Socrative, aligning with AusVELS which can be given as a pre and post-test. The data from this assessment will then be effortlessly downloaded as an Excel spreadsheet and used to provide immediate feedback, identify student growth points and allow you to decide on areas to focus on for follow-up lessons. By letting Socrative do the mundane work, you save yourself time during both planning and reporting sessions. Participants will be provided with digital copies of Socrative assessments already created and the Excel spreadsheet to analyse the results.

Notes: Please bring your own laptop (fully charged) and a USB to collect resources.

Repeated as H31

A40 Trisection of Angle with Origami Workshop

Karim Noura - Bayside P-12 College, VIC

Teachers will be able to share activities of doing mathematics by folding papers. We will use Origami to create geometrical shapes. We will also show how to trisect straight and right angles as well as any arbitrary angle by folding papers. By the end of this workshop we should be able to extract and put more light on the geometrical demonstration of such problems.

Repeated as G36

A41 Student Created Technology to Collect Real Data in Mathematics Workshop

Colin Chapman - Caroline Chisholm Catholic College, VIC

This session will present a reaction time study that can be implemented in Mathematics, with important links to Science and Health and Physical Education. We will program a number of different microcontrollers – the Basic Stamp, the Arduino and the mbed. The devices will be used to collect reaction time data so that learners may compare reaction time for subjects under different levels of distraction, such as mobile telephone use. The study replicates a number of peer reviewed studies. We will use the open source Plot.ly to develop comparative box plots so that we may make sense of the collected data.

Notes: Please bring a laptop with either a Chrome browser, or Chrome extension on your preferred browser.

Repeated as B43

A42 Reasoning and Proof in Junior High School Lecture

Dr Paul Brown - Carmel School, WA

Proof should be introduced earlier than Year 11. Martinez (http://redimat.hipatiapress.com, 2014) found that most of the 14 and 15 year old students in her study were able to construct algebraic proof, and she recommends that proof should not be restricted to geometry. This session will demonstrate some of the reasoning and proof activities that the author has found to be successful with students from Year 3 to Year 10. Reasoning and proof activities develop mathematical intuition and understanding, they make fluent use of mathematical methods and they encourage clear communication: the very things we want our students to be doing.

Repeated as E32

A43 Mathematics of Rock Band Photography Lecture

Paul Pascoe - St Francis Xavier College, VIC

A lecture style presentation about the Mathematics of Photography by a professional photographer of Music and Special Events, who also works as a Maths/ICT Teacher. The presentation will discuss the mathematics and optics of modern Digital DSLR cameras, including Lenses, Aperture, Shutter Speed, ISO sensitivity, White Balance, Colour Temperatures, Sensor Size and Pixels. Also covered are: Photo Composition Geometries, including the “Nines Rule”, Flash Photography inverse square law for light intensity and Diffusers, Digital Image Compression and File Formats, as well as optimising image size and load time for online use of images - particularly for Facebook, Instagram, and Flickr.

Notes: My presentation will be available on my Mathematics Website (Passy’s World of Mathematics) after the Conference.

Repeated as F33
A44  Values in Mathematics: Insight Into Student and Teacher Values in the Classroom  
Workshop  
**Years 7 to 12**  
_Darren Fitzpatrick - Hillcrest Christian College, VIC_  
Everyone involved with Mathematics has different things they value in Mathematics, including teachers, students and parents. These values are linked with motivation, enjoyment and success in Mathematics. In this seminar, you will have an opportunity to develop a deeper understanding of your own values in Mathematics and how this compares and contrasts with other teachers and with students. Based on this deeper understanding, we will consider ways each teacher can supplement or extend their own teaching to reflect the teacher’s values and build bridges to also incorporate student values.  
*Not repeated*  

A45  Teaching Mathematics Successfully with Disengaged Learners; An Overview of the EMPower Program  
Workshop  
**Years 7 to 12**  
_John Lawton - Objective Learning Materials, VIC_  
_Richard Korbosky - ECU/MAWA WA_  
The EMPower metric program builds understanding through contextualised lessons that engage all students in a classroom. EMPower offers teachers of non traditional mathematics programs a well written, flexible and comprehensive resource. Performance understanding is required as students work collaboratively on numeracy foundation concepts in real world settings. Richard Korbosky will facilitate a demonstration EMPower lesson and will show how the program uses a broad definition of what mathematics means while reaching students at all secondary levels. The session concludes with discussion on the challenges involved in meeting the Australian Curriculum mathematics goal of achieving numeracy for all students.  
*Not repeated*  

A46  Teaching With the iPad  
Workshop  
**Years 7 to 12**  
_Freda Armstrong - Presbyterian Ladies’ College, VIC_  
_Ian Taylor - Presbyterian Ladies’ College, VIC_  
_Commmercial 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. This session includes a ‘hands-on’ workshop.  
*Notes: Participants own iPad or laptop are required for this session. Participants must install the Doceri App on their iPad (Free from iTunes) and install Doceri desktop (Trial) on their laptop (Free download from www.doceri.com).*  
_Repeated as C42*  

A47  TI-Nspire as a Platform for Dynamic Assessment: Create Your Own Auto-grading Tasks  
Workshop  
**Years 7 to 12**  
_Dr Stephen Arnold - Compass Learning Technologies, NSW_  
_Commmercial Presentation_  
Two of the most time-consuming but important tasks which teachers face regularly involve the setting and grading of student tasks. Imagine if these processes could be simplified? Teachers create and customize tasks for both exploration and assessment with just a few mouse clicks and, once completed, student results are automatically graded and organised for analysis and review. In this session, you will be introduced to a free TI-Nspire resource package which prototypes this approach for functions and graphs. Feedback from the session will help to guide further development and participants are warmly encouraged to use these materials with their own students.  
_Repeated as B47*  

A48  Exploring the Question Application in TI-Nspire & Navigator  
Workshop  
**Years 8 to 12**  
_Ray Cross - St Margarets Anglican Girls School, QLD_  
Who knows that the TI-Nspire calculator has a built in question tool that you can use to provide self-correcting polls, quizzes, documents and tests for your students delivered wirelessly via Navigator? Discover questioning:  
◊ Formats - choose the why, how and way.  
◊ Delivery - real time, when you want it, how you want it.  
◊ Collection - you or your students decide when.  
◊ Correction - immediate.  
◊ Analysis - by each question, class or individually. It's full, instant and comprehensive feedback.
Notes: Please bring your TI-Nspire CAS calculator and laptop. Some calculators will be available.
Not repeated

A49 Investigating Trinomials with Integer Roots
Workshop
Ray Williams - St Mark's Anglican Community School, WA
This session uses the TI-Nspire’s ability to do algebra in a spreadsheet to investigate trinomials where the coefficient of $x^2$ is unity. Using the CAS facility, a time consuming and difficult exercise is made easy and patterns can emerge to reveal possible solutions to the question "Is there a way of finding which of these trinomials can be factorised with integers?" The results are quite interesting and lead to further areas to investigate.
Repeated as G40

A50 MAV's 'Biggest Loser' Gambling Project
Lecture
Robert Money - VIC
Donald Smith - VIC
Dr Ian Lowe - Mathematical Association of Victoria, VIC
Around 5% of adolescents are problem gamblers and schools are increasingly taking steps to deal with this issue. We will report on MAV's school-based trials of its cross-curricular 'Biggest Loser' project. The mathematics component is a 2-3 week unit that fully covers the statistics and probability in the Year 9/10 curriculum. Learning activities highlight the long term expectation of losses in gambling, in particular in sports betting and on poker machines. Key elements are the questionnaires that aim to assess changes in student attitudes to gambling. There are opportunities for wider school involvement in 2015.
Repeated as C47

A51 Rock Your ClassPad with BYO Functions and Programs
Lecture
Charlie Watson - The Tuition Centre, WA
This hands-on workshop is designed for teachers who want to discover how to add more functionality to both old and new models of the Casio ClassPad. Starting with the Define command in Main, we'll move on to explore simple, open programs saved as eActivities and conclude by learning the basics of the Program app. Sounds a bit nerdy? Maybe, but the focus will remain on math applications to help you and your upper school students become highly efficient technology users. A reasonable working knowledge of either ClassPad would be useful, though not essential, to keep up with the hands-on activities.
Notes: You may choose to bring your own Casio ClassPad (old or new model) - a few available to loan on day.
Repeated as F41

A52 Exploring Problem Solving Using Technology Applications
Workshop
Kevin McMenamin - The Peninsula School, VIC
Once a mathematical problem is 'seen', invariably it can be solved. The use of spreadsheets and (dynamic) images help to quickly 'visualise' the problem, thus prompting thoughts that help to find the mathematics embedded in the question. This session is a 'hands-on' experience that will allow you to explore some problems that are helped via the use of technology. If you do not have a device with spreadsheet or geometry capabilities, the new CAS ClassPad calculator will be available for you to use.
Notes: Bring along your own calculator. Some ClassPads will be available for loan.
Repeated as E41

A53 Learning Experiences with Trigonometric Functions
Workshop
Yew Fook Chan - School of the Arts, Singapore
Teachers will gain an understanding on the rationale and considerations in designing appropriate learning experiences for students and obtain ready-made learning lessons for immediate use. This workshop will provide opportunities for teachers to help students:
1. Discover the graphical features of sine, cosine and tangent functions through investigating the effects of changing parameters, $a$, $b$, $c$ and $d$ for the graphs $y = a \sin [b(x + c)] + d$, $y = a \cos [b(x + c)] + d$ and $y = a \tan [b(x + c)] + d$, and
2. Learn basic data modelling skills with sine and cosine functions.
Notes: Please bring along a TI-Nspire CX or CAS with the latest operating software (Version 3.6), if you have one, to download the tns files that are provided by the presenter.
Not repeated
A54 Probability and Pell’s Equation - An Algebraic and Experimental Approach  
Lecture  
John Kermond - John Monash Science School, VIC  
Years 11 to 12  
Pell’s equation is any Diophantine equation of the form \(x^2 - ny^2 = 1\) where integer solutions for \(x\) and \(y\) are required. Its solution leads to ideas such as continued fractions and recurrence relations. A probability question leading to Pell’s equation is explored and solved for specific and general cases using both algebraic and experimental (spreadsheet) approaches. Results are used to generate several conjectures which are then proved using mathematical induction. The question involves ideas that could be applied to analysis tasks in both Mathematical Methods (CAS) Unit 2 and General Mathematics (Specialist).  
Not repeated

A55 Uncovering Mathematics Misconceptions Through Classroom Discourse Using Strategic Questioning and TI Technology  
Lecture  
Chiu Jin Yeo - Temasek Junior College, Singapore  
Years 11 to 12  
In the process of making sense of new ideas, students often made their own assumptions and resulted in erroneous applications. Classroom discourse involving teacher and students’ questioning, supported by TI-Nspire technology is an effective way for students to uncover their misconceptions. They critique their own ideas and seek to understand concepts behind abstract mathematical ideas. In this session, I will share common student misconceptions from topics such as function, graphing, inequalities and calculus, as well as on the use of strategic questions and technology that engage students to think critically about their misconceptions.  
Notes: Please bring your own laptop (fully charged) installed with TI-Nspire software to this session.  
Repeated as B54

A56 Senior Mathematics Curriculum  
Lecture  
Allason McNamara - Mount Scopus Memorial College, VIC  
Dr Philip Swedosh - King David School, VIC  
Dean Lamson - Ballarat Clarendon College, VIC  
Years 11 to 12  
What is new in the Senior Curriculum for Mathematical Methods CAS and Specialist Mathematics? An outline of the new courses will be given and the changes will be highlighted. Probability and Statistics will be a particular focus.  
Not repeated

A57 School Maths to Uni Maths for Engineering and Science  
Lecture  
Dr Mary Coupland - University of Technology, Sydney, NSW  
Years 11 to 12  
I teach first year students in Engineering and Science courses. They are delighted to see where, and how, their maths from High School is developed and used. For example, Electrical and Mechanical Engineering use similar differential equations to describe vibrations and oscillations, and complex numbers are used to analyse these, along with calculus of course. Integration is used for finding many quantities, not just areas and volumes. Working with chemical reaction rates requires partial fractions. This talk will have lots of applied mathematics in it and help you answer those “When am I ever going to need this?” questions.  
Repeated as H43

SESSION A-B: 11:10am-1:30pm Thursday 4th December

A-B1 Analysing the Mathematics Online Interview for Differentiated Learning  
Workshop  
Monika Gruss - VIC  
Years F to 6  
This practical, hands-on, professional learning opportunity looks at how to provide formative evaluation by analysing data from the Mathematics Online Interview and forming differentiated learning groups. Participants will gain knowledge of the difference between ‘critical understandings’ (growth points) and points of growth in number and how this relates to the Mathematics Continuum. In addition to this we will explore how to analyse whole school data to look for gaps in student’s learning from Foundation to Year 6 and look at ways on how to lift student’s mathematical knowledge by addressing the critical understandings in Mathematics. In preparation for this workshop download and bring a copy of the following reports from the Mathematics Online Interview along with your laptop. Group Profile Reports for...  
◊ Number  
◊ Counting  
◊ Place Value  
◊ Addition and Subtraction  
◊ Multiplication and Division  
Not repeated
A-B2 Investigations and the Proficiency Strand
Workshop
Derek Holton - VIC
Years 2 to 10
This session will develop a straightforward problem to show how mathematics and an investigation develops. Reference will then be made to the Proficiency Strand and other relevant strands of the curriculum. But hopefully too you will enjoy just playing with maths.

Notes: Please bring a pen and paper. This session will be repeated with a different starting problem.
Repeated as F-G3

A-B3 Give Them A Choice
Workshop
Douglas Williams - Mathematics Centre, VIC
Years 3 to 10
When you choose something it is more likely you will develop ownership of it.
◊ Ownership can lead to more commitment.
◊ More commitment can lead to more success.

Perhaps if we offered real choice more often in our mathematics lessons our students would have more success? For much of this workshop you will be able to choose your own mathematics. The theme will be pattern and algebra. You will be encouraged to discuss the value of offering choice in the classroom, how you would assess learning in such a classroom and how lessons of choice can be integrated with teacher-directed lessons.
Not repeated

A-B4 Jack and Jill’s Buckets and How to Write a Maths Report
Workshop
Damian Howison - St Mary MacKillop College, VIC
Years 5 to 9
Jack and Jill went up the hill…. and were faced with a mathematical conundrum. We will learn about that problem and how it was solved. At the same time we will learn about one particular model of writing a mathematical report. Maths teachers often don’t feel very qualified to give learners advice about writing. But when learners have worked like a mathematician on an interesting problem they should also know how to communicate this work to others. This workshop aims to give those learners and their teacher the tools to publish a report as well as delve deeply into a simple but very interesting problem.
Not repeated

A-B5 Using ‘Algebra Tiles’ to Teach Integers, Expansion and Factorisation
Workshop
Michael O’Reilly - VIC
Norrian Rundle - VIC
Years 7 to 10
This extended 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 & 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. 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’. 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 - 2013 MAV Annual Conferences.]
Notes: Participants should bring along a USB Memory Stick.
Not repeated

A-B6 How Does the Digital Classroom Enhance the Effectiveness of the Educator?
Workshop
Luke Kerr - Mt Eliza Secondary College, VIC
Peter Fox - Texas Instruments, VIC
Years 7 to 12
This workshop will provide Maths Educators with the opportunity to learn and share resources currently used by members of the workshop to best engage their students. It will focus on the technology available rather than one specific device that will enhance student engagement and promote greater student autonomy in Maths. It will focus on platforms and apps that offer students the ability to better collaborate locally and globally. It will also showcase learning platforms that deliver 1 to 1 learning.
Notes: Participants are encouraged to bring a Laptop, iPad, smart phone, TI-Nspire calculator if they have one.
Not repeated
A-B7  TI-Nspire to the Next Level
Computer Workshop
Sanjeev Meston - Hillcrest Christian College, VIC

This session will focus on using the TI-Nspire CAS technology for VCE Methods course and will also be relevant to Years 10-12 mathematics teachers. The session will bring out some under-utilised features, functionality and power of CAS that can help students conceptualise the Methods course better and thereby improve their learning outcomes. The TI-Nspire CAS technology is a very powerful Mathematical technology which is not utilised to its full functionality for VCE Mathematics.

Notes: Participants are encouraged to bring a charged TI-Nspire calculator (CX), so that they can receive the files on their CAS and also be able to work through them during the session.

Not repeated

SESSION B: 12:30pm-1:30pm Thursday 4th December

BK1  Add, Subtract, Multiply, Divide and Conquer
Keynote
Yvonne Reilly - Sunshine College, VIC
Jodie Parsons - Sunshine College, VIC

For many decades school communities have struggled to provide a comprehensive curriculum which meets the needs of all students while ensuring staff have the capacity and the will to deliver it. When we first started this journey we were classroom teachers. We held no positions of responsibility. We were languishing at the bottom of the curriculum food chain. Over a period of time we altered our classroom practice, discarded the textbook and created a curriculum which concentrated on the development of conceptual understanding as opposed to procedural knowledge. As you can imagine along the way we met a few obstacles. This presentation will take you on a journey through the (many) disappointments and the highly (but seldom experienced) successful moments of changing school curriculum. Come and find out how we juggled DEECD requirements and the desire by some teachers to resist change with the needs of our students to develop a comprehensive curriculum program which provides accelerated learning for all students. If you are interested in making an impact on student learning and teacher professional growth then this presentation is ideally suited to you.

Yvonne Reilly, BSc.(Hons), PGCE, MSL (num) and Jodie Parsons, BSc (Hons), Grad Dip. Originally a Scottish research scientist, Yvonne started work as a teacher of mathematics and science at Sunshine College in 2007. It was here that she and fellow teacher Jodie Parsons started to develop and trial various ways to improve student outcomes in mathematics. They experimented with a variety of curriculum styles and listened to the advice (but didn’t often take it) from teachers wide and far, crediting most of their professional learning to the students themselves.

At Sunshine College they revolutionised the mathematics curriculum by doing away with the text books and developing lessons which were fully inclusive and differentiated. Visitors to the college, to see the program in action, are often overwhelmed by the complexity of the program and the commitment of the staff to keep the programming running. A typical maths class at Sunshine College is anything but typical. The success of the program has led them to be featured on Channel 7 and in newspapers in the UK and Australia. After many requests for resources Yvonne and Jodie have published the first two volumes of their teacher resource book: Maths in the Inclusive Classroom 1 & 2. Both Yvonne and Jodie have co-authored several papers and have presented at many conferences in Australia and around the world, most notably conferences in the US and New Zealand, and recently picked up an award at the ACER Excellence in Professional Practice Conference for outstanding conference presentation. Both have been a regular feature at MAV since 2009.

B2  Connecting the Dots
Workshop
Anne Milburn - Cognition Education, Auckland, New Zealand
Christine Graham - Cognition Education, Auckland, New Zealand

Pattern and structure provides the basis for Mathematical thinking. When pattern and structure is not developed and embedded then children do not have a framework to build their thinking on. Pattern and structure needs to be explicitly taught. Making connections for children, will assist with their understanding of the key concepts. This practical hands-on workshop will provide a range of experiences and examples that can be used to develop pattern and structure.

Repeated as A3
B3  Teaching Addition and Subtraction Mental Computation Strategies Through a Whole School Approach (F-6)  
Workshop  
Bern Long - St Carlo Borromeo Primary School, VIC  
Angela Rogers - RMIT University, VIC  
Teaching Addition and Subtraction Mental Computation Strategies through a whole school approach (F-6) The intention of this workshop is to provide an opportunity for classroom teachers to develop an in-depth knowledge of the teaching and learning of addition and subtraction mental computation strategies from F-6. Teachers will be shown quality resources and activities to assist develop these mental computation skills and research-based evidence will be used to reinforce their importance. The session will also highlight practical ways to develop mental computation through all strands of the Australian Curriculum.  
Repeated as A5

B4  Google Drive - The Driver!  
Lecture  
Chris Kellett - Melton Primary School, VIC  
Brian Wheelahan - Melton Primary School, VIC  
Brett Strachan - Melton Primary School, VIC  
At Melton Primary School (MPS) we are very proud of our current numeracy approach. With the introduction of Google Drive across the school to support our ‘PLC’ model,’ our staff have never been better equipped to teach the individual needs of our students. We utilise Google Drive to track all students in a collaborative manner while taking collective ownership of all students within a cohort. This results in purposeful planning for all students needs and appropriate to AUSVELS. Moderating and tracking sessions are conducted on a weekly basis with teachers producing evidence to allow for a sequential transition. During this session, participants will be shown all of the tools utilised by staff at MPS and leave with a confidence to use them in their own schools.  
Repeated as D4

B5  Teaching and Loving Mathematics in a Mixed Ability Classroom  
Workshop  
Peggy Ashton - La Trobe University, VIC  
Jennifer Vincent - NMIT, VIC  
This workshop will outline strategies for developing a learning environment that can support students’ access and success in mathematics. We will also explore ways of nurturing a classroom climate where learning mathematics is fun. A CD of activities will be provided.  
Repeated as A7

B6  2014 Partnerships for Learning  
Lecture  
Jennifer Bowden - Mathematical Association of Victoria, VIC  
Ellen Corovic - Mathematical Association of Victoria, VIC  
Ashlie Hassell - Derrimut Primary School, VIC  
Jenny Briggs - Derrimut Primary School, VIC  
Kaelyne D’cruz - Derrimut Primary School, VIC  
Ivanka Vinski Rebecca - Deer Park North Primary School, VIC  
Michelle Lopaticki - Stevensville Primary School, VIC  
Lauren Crack - Stevensville Primary School, VIC  
This year MAV Education Consultants Jennifer Bowden and Ellen Corovic have been working with a cluster of four primary schools within the North Eastern region on a Professional Learning project. The targets of the project are to support the individual school’s professional learning requirements whilst ensuring a partnership for learning between MAV and the four school. The partnership has ensured teachers share effective teaching and learning practices, along with resources, with the guidance of the MAV Education Consultants. The four schools involved in this partnership with the MAV are Albanvale Primary School, Derrimut Primary School, Stevensville Primary School and Deer Park North Primary School. In this session teachers from the schools will provide an insight into their learning journey.  
Repeated as C5
B7 Developing Geometric Reasoning Abilities Through Visualisation
Workshop
Dr Rebecca Seah - RMIT University, VIC

The development of spatial sense is a key component of understanding the world around us and learning higher mathematics. Making sense of the spatial world involves an ability to visualise shapes, objects, their properties and the relationships among them. Children who are skilled in forming mental images of patterns and relationships can devise quicker solutions to problems. Using paper folding activities, this session shows how the process of creating different objects allows children to visualise shapes and their properties from different orientations, leading to better understanding of 3D objects.

Repeated as F9

B8 Rich Tasks: The Relationship Between Higher Order Thinking Skills and Problem Solving
Workshop
Kelly Utting - Hillsmeade Primary School, VIC

In this workshop, participants will explore the notion of using rich tasks in:
◊ Enriching mathematical experiences to provide all students with opportunities to explore, engage with, and communicate mathematical ideas.
◊ Offering students challenging activities and resources which can develop mathematical thinking and problem solving skills.
◊ Exploring the use of mathematics in engaging and meaningful contexts.
◊ Using rich tasks to foster a community where students and teachers collaborate and support each other in developing their understanding and skills and where effort and achievement is celebrated.

Repeated as A9

B9 Where is the Reasoning?
Workshop
Associate Professor Colleen Vale - Deakin University, VIC
Dr Wanty Widjaja - Deakin University, VIC
Dr Sandra Herbert - Deakin University, VIC
Dr Leicha Bragg - Deakin University, VIC
Dr Esther Loong - Deakin University, VIC

In this workshop we will discuss examples of primary children’s mathematical reasoning and the ways in which primary children may demonstrate mathematical reasoning. The examples and discussion will be presented so as to support teachers’ to recognise reasoning in their classrooms, assess children’s reasoning, take action to elicit and encourage reasoning and to plan tasks for the classroom with the objective of developing children’s mathematics reasoning. Material for this workshop will be drawn from our work with primary students and teachers in the Mathematical Reasoning Research Project conducted by the team at Deakin University.

Repeated as E9

B10 The 0.67 Effect
Lecture
Michael Portaro - Melton Primary School, VIC
Sheree Lucas Portaro - VIC
Jaynay Miller - VIC

Thanks to Hattie, we can gauge not only the relative effectiveness of almost every educational intervention under the sun but we can compare these interventions on an absolute scale of effect size. Hattie found that “Vocabulary Programs’ had an effect size of 0.67.” Melton Primary School (MPS) have embedded a whole school systematic approach to improving the development of mathematical vocabulary. MPS uses Marzano’s research on ‘Building Academic Vocabulary’ to create what lives and breathes in each classroom and is now translating to an improvement in student learning outcomes. Presenters of this session will guide you through the implementation stages of the program then onto to the activities and strategies used to support it. Session One will focus on the implementation of this initiative. Session Two will focus on classroom strategies to support the initiative.

Repeated as A11

B11 Know Thy Impact - Visible Learning
Workshop
Shane Ezard - Northern Bay College, VIC
Adam Gilbert - Northern Bay College, VIC
Sheila McCarthy - Northern Bay College, VIC

ENGAGING, CHALLENGING & PURPOSEFUL - Using an explicit assessment, planning, teaching and feedback cycle, that personalises instruction and sees learning through the eye of the students. A journey from teacher driven to student directed learning and data ownership.

Repeated as C11
B12  Geometry With Graphing Calculator for Pre-School and Primary School Students
Workshop Years 1 to 5
Dr Pumadevi Sivasubramaniam - Teacher Education Institut Raja Melewar Campus, Malaysia
Mohd Ariff Jasmi - Teacher Education Institut Raja Melewar Campus, Malaysia
Richma Richard - Teacher Education Institut Raja Melewar Campus, Malaysia

This workshop is for participants who are beginners in the use of graphing calculators. The geometry application will be covered during the workshop. The content of the workshop is to enable a teacher to equip her pre-school or primary school students to engage in creative activities using exciting dynamic geometry. If you don’t have a graphing calculator - we will provide you with one to use during the workshop. Just enjoy the fun you can create in your classroom with hand-held technology.

Notes: Bring a TI-NspireCX graphing calculator if you have one - if not one will be provided.

Repeated as C14

B13  Involving Parents in Supporting Children With Their Basic Facts
Lecture Years 1 to 6
Colleen Monaghan - Our Lady Of the Nativity Primary School Aberfeldie, VIC

Are you looking for ways to help support students who are struggling with basic maths facts? In this session I will discuss a program I have implemented in two schools to help students who are struggling with their basic facts. Involving parents in supporting students has shown great gains for both the students and the parents. Short, sharp regular sessions run by parents have proven successful in gaining students confidence with their maths ability and also improved their skill level. This workshop will allow you to see just how easily you could implement a similar program into your school.

Repeated as C15

B14  Posing Mathematical Problems Using Sophisticated Picture Books
Workshop Years 1 to 7
Linda Cheeseman - Cognition, New Zealand
Anuja Singh - Auckland Ministry of Education, New Zealand

Join us in a practical learning conversation based workshop investigating how to develop explicit links between Literacy and Mathematics. Find out exciting ways to engage your students by combining key mathematical language and literacy skills along with the development of essential mathematics concepts. We will look at a range of interactive mathematical problem solving activities generated from favourite sophisticated picture book stories.

Repeated as A14

B15  Dyscalculia and Low Numeracy: From a Teacher’s Perspective
Lecture Years 1 to 12
Ann Williams - Deakin University, VIC

All teachers, at both primary and secondary levels should have an awareness of all Learning Disabilities, including dyscalculia, and be able to recognise their characteristics. This presentation will address a number of issues. The definition and causes of dyscalculia. Dyscalculia as a specific learning disability. As a neurological condition which has genetic links. How it affects a child’s self-belief system, their self-esteem, self efficacy, and maths anxiety. How children learn arithmetic and some evidence based strategies to compensate for dyscalculia. This presentation is based on an article: Williams, A. (2012). A teacher’s perspective of dyscalculia: Who counts? An interdisciplinary overview. Australian Journal of Learning Difficulties, 2012(Oct), 1-16. doi: 10.1080/19404158.2012.727840

Not repeated

B16  Dynamic Digits
Workshop Years 2 to 6
Deborah Reeves - Waikato University, New Zealand
Alison Howard - Cognition Education, Auckland, New Zealand

Let’s examine the big mathematical ideas of place value. In this workshop we will explore ways to develop place value understanding through use of equipment, games and rich tasks when working with students. The focus is on early numeracy stages and beyond.

Repeated as A17
B17 Card Games in the Mathematics Classroom
Workshop
Richard Korbosky - WA
Years 2 to 8
Commercial Presentation
Get your students excited to learn, think and communicate mathematically with DUALOH maths card games: Whole numbers, Subitising, Multiplication, Fractions. Each of the four games are enjoyable, challenging and adaptable to different abilities and adapted to focus on ordering, addition, subtraction and multiplication. Come along to see how you get students to practise basic facts, focus on mathematical language, develop flexible and mental thinking strategies and most of all see mathematical concepts in a variety of ways.

Notes: Participants can bring along their iPads as well.
Repeated as F13

B18 Why Learning to Calculate (Mentally) Matters and One Way to do it
Workshop
Anthony Harradine - Potts-Baker Institute, Prince Alfred College, SA
Years 2 to 10
After three years of working with young students to help them develop mental calculation competence, Anthony thinks he knows why it is an important thing to develop and one way to achieve it. Prior to now he thought it was important, but was never sure why - come along and find out the why. While developing mental calculation competence is a requirement of the Australian Curriculum in the middle primary years - Anthony has show that intervening at Year 7-9 can have positive effects on skill and, perhaps even more importantly, attitude.

Notes: Please bring your mind :)
Not repeated

B19 Supporting Low Achieving Student’s Motivation and Engagement in Mathematics
Workshop
Amanda Ferguson - University of Waikato, New Zealand
Helen Rodgers - University of Waikato, New Zealand
Years 3 to 6
Helping low-achieving students to acquire mathematics proficiency requires a variety of effective instructional practices that support student’s motivation and interest in maths lessons. In this workshop we will be discussing the importance of problem-solving to engage mathematical thinking and look at how rich tasks can be used and adapted to effectively meet the needs of learners. Examples of student’s work will be shown and we will explore a range of activities and materials that can be used to support low achieving students operating at New Zealand Framework Stages 4-6.
Repeated as A19

B20 Controversial Coops.... Solving the World’s Problems One Chicken at a Time
Workshop
Marielouise Phillips - Catholic Education Office Melbourne, VIC
Birsin Reynolds - Catholic Education Office Melbourne, VIC
Years 3 to 6
This workshop will use the content area of Measurement to explore using a real life context to develop a rich task that promotes challenge and persistence.
Repeated as E14

B21 Language Difficulties in Mathematics
Workshop
Robyn Holt - University of Waikato, Hawkes Bay, New Zealand
Years 3 to 7
There is a range of language issues that can that can affect a child’s progress and achievement in mathematics. It is important teachers are aware of the problems a child may be having in making connections between language, symbols, pictures and real life situations. This workshop will investigate some of these issues and offer ideas to assist teachers in helping the child overcome these specific mathematics related language difficulties.
Repeated as A21

B22 Making Mathematics Visual - The Model Method That Improves Problems Understanding and Fosters Pre-Algebraic Thinking
Workshop
Vei Li Soo - Balaklava High School, SA
Years 3 to 8
The Model Method is a visually powerful tool that enables students to understand problems involving whole numbers, fractions, ratio and percentage at a pictorial level, leading them to the abstract methods in problem-solving. At the same time, it develops deeper understanding of these concepts and proportional reasoning, and fosters pre-algebraic thinking. An essential part of the primary maths curriculum for all primary students in Singapore, the Model Method has been used successfully with struggling Mathematics students in an Australian high school.
Repeated as G15
**B23  Aligning Values, Energising Mathematics: How Expert Teachers Do It**  
**Workshop**  
_Years 3 to 10_  

_Dr Wee Tiong Seah - Monash University, VIC_

The school classroom represents a space where the culturally-based values of students and their teachers intersect. It is believed that expert teachers have honed their skills at aligning the values that are different and potentially in conflict in class. The significance of this professional craft for teachers of mathematics should not be understated, given the many students who have weak cognitive skills or negative emotional associations in relation to mathematics learning. In this workshop, we will see what expert teachers do - and explore what we can do - in the mathematics classrooms to align what are valued by all involved.

**Notes:** Bring along a typed/written account of a recent mathematics lesson which went particularly well. In this episode, what did you or your students do that is different?

_Repeated as F18_


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**B24  Lets Make Mathematics Rock With Problem Solving**  
**Workshop**  
_Years 4 to 8_  

_Jill Peterson - Waikato University, New Zealand_  
_Brenda Walker - Waikato University, New Zealand_  
_Sue Bullick - Waikato University, New Zealand_

Let's make Mathematics rock with productive talk through problem solving. This workshop will be an interactive problem solving workshop using rich tasks and parallel problems.

_Repeated as G16_


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**B25  Why Me? - Year 7 Modified Maths**  
**Workshop**  
_Years 4 to 8_  

_Mark Ljubic - Chaffey Secondary College, VIC_  
_Soraya Davids - Chaffey Secondary College, VIC_

The Mathematic Gods have been unkind to you - Yes you have scored a whole class of students who would be flat out being book ends in a library. The Principal and Maths Head are expecting everyone to lift the AusVELS level by at least 0.5 as this is a big push in the school's annual review; however survival is your number one priority. During this session we will look at a range of activities that can keep you sain, the students engaged and the Mathematics Head pleased. Some of the activities on offer include “Walter Wonka’s Chocolate Bars” that explores times tables, area and perimeter. Also “Fishing With Decimals” which explores working with decimals.

_Not repeated_


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**B26  Flipping Mathematics With Adobe Presenter (Free for OSX)**  
**Workshop**  
_Years 4 to 12_  

_Dr Tim Kitchen - Adobe, VIC_

_Commercial Presentation_

Adobe Presenter is a great tool to flip the Mathematics classroom and create digital learning content. It captures your screen, your web cam image and audio and allows editing in about the same time it takes to do the presentation - amazing. The Apple OSX version is free via the App Store and is all you need to do this workshop. The full Windows version of Presenter allows users to convert PowerPoint slides into interactive online presentations, create engaging drag and drop interactions and build effective eLearning modules that can be tracked for progress and analysed for effectiveness. What is covered during this workshop:

◊ Basic video capture techniques.
◊ Doing an effective presentation.
◊ Working the simple editing tools (3 buttons).
◊ Publishing.

Presenter is one of over 50 Adobe tools that are being used by educators all over the world to enhance creativity in the learning and teaching process. Dr Tim Kitchen is Adobe’s Senior Education Advocate for Asia Pacific. He will share the value of Presenter and touch on some of the other Adobe tools that many educators already have without realising.

**Notes:** A laptop with Adobe Presenter (Windows) or the free Mac version of Adobe Presenter Video Express (available via the App Store) would be beneficial but not essential for this workshop.

_Repeated as C25_
B27  Anything Can Mean Anything Else: Playing With Codes. A Participatory Workshop Including Working in Small Groups
Workshop  
David Demant - VIC

Commercial Presentation
There are many types of codes, some secret. We examine one type, which uses just two different things: like the letters 'a' and 'b', or the numbers ‘1’ and ‘0’; in fact any two things. We'll make codes with Neenish tarts, magnetic discs, cups, coats, people... and model cars arranged to send a message to the sky. On the way, we delve into history and tell a tall story or two. Cross-curricula: history, maths, cooking, science, photography. Strands: problem solving, number & patterns, reasoning, understanding. Available to schools in 2015; fee to be negotiated.
Repeated as A25

B28  Linking the Australasian Problem Solving Mathematical Olympiads and the Australian Curriculum Proficiencies
Workshop  
Dr Anne Prescott - APSMO Inc, NSW
Jon Phegan - APSMO Inc, NSW

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 as a result the enhancement of students’ enjoyment and enthusiasm for mathematics. (APSMO Inc is a not-for-profit organisation.)
Repeated as C27

B29  Problem Solving
Workshop  
Daniel Avano - Museum Victoria/Scienceworks, VIC
Michael de Zilva - 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 (online maths programs, hire kits and student workshops) available from Museum Victoria.
Repeated as A26

B30  Earth, Moon and Sun Maths
Workshop  
Tim Byrne - VIC

If we look up we can see another world of opportunity for teaching maths. Australia is famous for its big clear skies; this session has lots of suggestions for taking advantage of this. Beginning with safe solar observations using a mirror, which lead to tracking the sun’s apparent movement and finishing with a simple sundial. Along the way students are introduced to the Earth’s rotational axis, latitude, longitude, time zones and orbital ellipses. Students can also become familiar with estimating and measuring altitude angles of the sun and moon with another home-made instrument. This is a hands-on workshop.
Not repeated

B31  Strategies for Problem Solving
Workshop  
Associate Professor 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 that was 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

B32  Every Student Learning Something Different - Calm or Chaos?
Lecture  
Jacqui Lee - Emerald Secondary College, VIC
Dr Jonathan MacLellan - Emerald Secondary College, VIC
Brad Gibbs - Emerald Secondary College, VIC

We’re all used to ‘token differentiation’: giving easy, medium or hard versions of practice work to students. But this still requires that all students learn the same maths at the same time. This year Emerald Secondary College has
tried something bold: true differentiation. Different students working on completely different things every lesson for
the whole year. So how do our lessons look now? Calm or chaos? Hear about our experiences, both positive and
negative, and see what resources we used for both hands-on learning and computer-aided assessment.

*Repeated as H19*

**B33 Informatics**

Lecture

*Adjunct Professor Mike Clapper - Australian Mathematics Trust, ACT*

The Australian Curriculum has now embraced Digital Technologies as a strand in the Technologies Learning Area. Students in Years 5 and 6 are expected to be able to design, modify and follow simple algorithms represented diagrammatically and in English involving sequences of steps, branching, and iteration (repetition), whilst by Year 8, they should implement and modify programs with user interfaces involving branching, iteration and functions in a general-purpose programming language. This potentially will have a large impact not only on Technology in schools but also on the way mathematics needs to be taught. The Australian Informatics Competition is probably the most significant resource material available in this area which does not require programming skills and this session will introduce this resource to teachers in a practical way. Incorporating Informatics problems into the maths curriculum has the potential to identify problem-solvers and to stimulate logical thinking.

*Repeated as H22*

**B34 A Tale of Two Activities**

Workshop

*Christine Lenghaus - VIC*

1. What can you do with two small ropes and only two moves (quarter turn and a do-si-do)? The Math Circle runs at Notre Dame University each year in the US. Last year I attended and this was my favourite - ropes, lots of knots and great maths (fractions).
2. From Dan Meyer’s Sydney presentation last year, my favourite is a bizarre virus simulation (tables of values and lots more).

*Notes: Bring a USB for any handouts in digital format.*

*Repeated as H27*

**B35 How We Doubled Student Learning in One Year**

Lecture

*Ben Schutz - Koo Wee Rup Secondary College, VIC*

When we measured our new Year 7’s, we found they had progressed an average of 0.6 years for each year of primary school. Most were so far behind that secondary maths was out of reach.

*Not repeated*

**B36 Juggle and Lift!! Numeracy and Mathematics**

Workshop

*Justine Johnston - Hume Central Secondary College, VIC*

*Jessica Macrae - Hume Central Secondary College, VIC*

Struggling students? Do you juggle teaching maths AND lifting the numeracy skills of your students? Resources, programs, approaches and strategies that we have implemented from Year 7 to 9 will be presented in this session to show how we have successfully lifted numeracy skills of students. This includes; Scaffolding Numeracy in the Middle Years (Year 7), Number Passport for school and home, mental computation, games and a range of resources/strategies utilised by staff to support numeracy development.

*Repeated as A36*

**B37 Mathematics of Rock Music**

Lecture

*Adam Kruger - Lyndhurst Secondary College, VIC*

*Scott Rumble - Lyndhurst Secondary College, VIC*

This presentation about the Mathematics of Rock Music is by two professional rock musicians who also work as Mathematic Teachers. We will exhibit a mathematics program that we have built at our college where students complete various tasks that entail a combination of skill development and application tasks. Topics are linked to real-world ideas making work relevant and link in to the student's world, thus engaging students and motivating their learning.

*Notes: Please bring your iPad if available.*

*Repeated as G25*
B38  More Problem Solving Please!
Lecture  Years 7 to 10  
Kelly Sharp - Scotch College, VIC

A common request in my Year 7 classroom is “Can we do problem solving today? You promised once per week!” Throughout my recent studies for my Masters, it was apparent this was not the case in many classrooms, indeed the tendency was for students to avoid problem solving. This session will demonstrate how I deliver problem solving, through carefully selected problems, to engage the student’s curiosity, confidence and enjoyment. It is not an extension of facts and skills, more so it is tapping into the student’s natural sense of logic and developing their ability the skills from their mathematical toolbox.

Repeated as H30

B39  Differentiating the Mixed Ability Maths Classroom: You Can Rock It!
Lecture  Years 7 to 10  
Meredith Plaisted - Carey Baptist Grammar School, VIC  
Greg Warmbrunn - Carey Baptist Grammar School, VIC

Nothing replaces the joy on a student's face when they “get it”. This happens so much more frequently in a differentiated maths classroom. This workshop will look at strategies which can allow you to cover your curriculum and also allow students to work in their zone of proximal development.

Repeated as C34

B40  From Arrays to Algebra
Workshop  Years 7 to 10  
Lorraine Day - University of Notre Dame Australia, WA

Commercial Presentation
Using concrete materials, within a Concrete - Representational - Abstract pedagogical approach, should be seen as one among many methods that contribute to the overall process of developing algebraic skills. With the Proficiency Strands of Understanding, Fluency, Reasoning and Problem Solving as the power driving the Australian Curriculum: Mathematics, there is increased motivation for teachers to ensure that students are not just fluent in algebraic manipulation but also understand how the processes work and reason mathematically. By linking an area-based model to previous understandings involving number and arrays should assist the conceptual understanding of algebraic expansion and factorisation. (NB: Although this is listed as a Commercial Presentation the ideas can be utilised without purchasing the materials.)

Not repeated

B41  20 is the Answer! Using Geogebra, Excel and Logo to Ask the Question!
Workshop  Years 7 to 11  
John Widmer - Mag-Net Online STEM Educators, VIC  
Robert Money - VIC  
Samantha Horrocks - Werribee Secondary College, VIC

This hands-on workshop will encourage participants to write 10 maths apps using mainly Geogebra to create open-ended scaffolding materials for tricky concepts in geometry and algebra! Workshop participants will be invited to “keep in touch” by creating an app website. No knowledge of the software will be assumed. Attending participants are invited to view some of the work that was inspired by Professor Peter Sullivan during his workshops at Werribee Secondary College by using some of the sample material located at http://scitech.net.au/maths_computes. The latest version of Geogebra and partly worked examples of Geogebra, Excel and Logo apps will be supplied.

Repeated as D36

B42  Grapple with Graphs
Workshop  Years 7 to 12  
Cathy Devlyn - Fintona, VIC  
Heather McCarthy - Fintona, VIC  
Angela Raven - Fintona, VIC

Many areas in secondary maths require students to work with and have an understanding of graphs. The CAS calculator has widened the scope of what is expected of our students and assessments regularly test their ability to deal with graphs and the interrelationships of the graphical, algebraic and numeric representations. This workshop will explore some of the graphing activities that help students to develop and deepen their understanding of graphs using the Casio ClassPad calculator. Participants will be provided with worksheet/analysis tasks and have the chance to explore some of the ideas presented.

Notes: Please bring your own Casio calculator: limited number of calculators will be available.
Not repeated
B43  Student Created Technology to Collect Real Data in Mathematics
Workshop  Years 7 to 12
  Colin Chapman - Caroline Chisholm Catholic College, VIC
This session will present a reaction time study that can be implemented in Mathematics, with important links to Science and Health and Physical Education. We will program a number of different microcontrollers - the Basic Stamp, the Arduino and the mbed. The devices will be used to collect reaction time data so that learners may compare reaction time for subjects under different levels of distraction, such as mobile telephone use. The study replicates a number of peer reviewed studies. We will use the open source Plot.ly to develop comparative box plots so that we may make sense of the collected data.
  Notes: Please bring a laptop with either a Chrome browser, or Chrome extension on your preferred browser.
  Repeated as A41

B44  Rocking the Maths Classroom - Short Activities to Inspire All Learners
Workshop  Years 7 to 12
  Duane Anderson - Bendigo Senior Secondary College, VIC
  Kara Fox - Bendigo Senior Secondary College, VIC
  Dr Barnaby Seviour - Bendigo Senior Secondary College, VIC
In this session we will present you with a series of short activities that we use to engage and diagnostically assess students in a variety of mathematical topics. The material presented is a combination of our own ideas plus adaptations to concepts we have observed over our careers.
  Notes: Not repeated

B45  Mathematica: Play, Create, Learn and Problem-solve with Tessellations Using the Graphics Primitive
Computer Workshop  Years 7 to 12
  Ian Willson - VIC
This workshop will provide to those with little or no previous experience of Mathematica an introduction to how the Graphics primitive can be used to draw colour polygons to use to create tiling patterns/tessellations. In the process learners will be required to use irrational numbers and coordinate pairs they compose themselves to build regular polygons for use in patterns of their choosing. The intention is to provide participants with ideas and the syntax know-how required to write basic Mathematica code for graphics. Activities will be provided for use in the workshop and for classroom use back at school.
  Notes: Participants require access to Wolfram Mathematica software, either on their own laptop or at their computer lab workstation.
  Repeated as F31

B46  Rock Maths Lessons With Visuals
Computer Workshop  Years 7 to 12
  Rodney Anderson - Moreton Bay College, QLD
  John Bament - O'Loughlin Catholic College, NT
In this workshop you will learn to create dynamic files embedded with visuals that can be used with the TI-Nspire handheld or the emulator software. These visuals will support standards from the Australian Curriculum. Examples include sliders, construction, inserting and working with images, optimisation and many more. Free tests and activities that supplement class lessons will also be distributed. If you have the TI-Nspire emulator installed on your laptop, please bring it along to the workshop.
  Notes: Participants may wish to bring a TI-Nspire handheld and/or personal laptop with TI-Nspire Teacher Edition software installed.
  Repeated as E33

B47  TI-Nspire as a Platform for Dynamic Assessment: Create Your Own Auto-grading Tasks
Workshop  Years 7 to 12
  Dr Stephen Arnold - Compass Learning Technologies, NSW
  Commercial Presentation
Two of the most time-consuming but important tasks which teachers face regularly involve the setting and grading of student tasks. Imagine if these processes could be simplified? Teachers create and customize tasks for both exploration and assessment with just a few mouse clicks and, once completed, student results are automatically graded and organised for analysis and review. In this session, you will be introduced to a free TI-Nspire resource package which prototypes this approach for functions and graphs. Feedback from the session will help to guide further development and participants are warmly encouraged to use these materials with their own students.
  Repeated as A47
B48  Ferris Wheels, Circles and Pi Workshop

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

Find out some interesting facts about some of the world’s most famous Ferris wheels and use this context to help motivate your students to develop a conceptual understanding of Pi, finding diameters, circumferences and areas of circles, using the TI-Nspire CAS Calculator. You will also explore equations of circles, circle Geometry and Trigonometry.

Notes: Loan Calculators will be available at this session.

Repeated as C43

B49  Mathematica Start Up at 10 and Before Computer Workshop

Lauren Wood - Wodonga Senior Secondary College, VIC
Dr David Leigh-Lancaster - Victorian Curriculum Assessment Authority (VCAA), VIC
Rohan Barry - Wodonga Senior Secondary, VIC

Wodonga Senior Secondary College is one of five new schools involved in the VCAA expanded implementation of computer-based examination starting with Year 10 in 2014. This workshop will look at AusVELS Mathematics Level 10 implementation with a focus on teaching and learning activities and related assessment using Mathematica digital documents called notebooks. There will also be some brief consideration of what could be done at earlier levels. We will use sample notebooks from the course, and participants are welcome to copy these materials. Previous familiarity with Mathematica is not required however participants should be familiar with working with software in a Windows environment.

Notes: Please bring along a USB to copy any files that are of interest.

Repeated as H35

B50  It’s Hip to be Square - Using Pythagoras in the Trades Workshop

Ruth Ginter - NMIT, VIC
Gilda Alavuk - NMIT, VIC

The presentation will include a hands-on activity demonstrating the application of Pythagoras’ Theorem as it is used in trade areas such as horticulture, carpentry and bricklaying. This real-life, applied learning activity allows students to explore ‘setting out’ methods necessary to achieve square paving and building lines. It can be incorporated or adapted for different year levels and particularly suited to VCAL and VET students.

Not repeated

B51  Make Your ClassPad Rock in the Classroom with These Tips and Tricks Lecture

Charlie Watson - The Tuition Centre, WA

This hands-on workshop is designed for teachers who want to be reminded (or discover) some of the very powerful features of the old and new models of the Casio ClassPad that may be useful for them and their upper school students. We will also look at new features of the latest ClassPad operating systems, 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.

Notes: You may choose to bring your own Casio ClassPad (old or new model) - a few available to loan on day.

Repeated as E38

B52  Worthwhile CAS Calculator Use in This Year’s 2nd Methods Exam? Workshop

Kevin McMenamin - The Peninsula School, VIC

Savvy use of the CAS calculator in past Methods 2 examinations has shown it to be advantageous and worth the time and effort in getting to know its workings. Generally 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. The session is suitable for Ti-Nspire and ClassPad users and the Casio ClassPad will be the featured CAS.

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

Repeated as G42
B53 Fun with Functions
Workshop
Bozenna Graham - Wesley College, VIC
Raymond Rozen - RMIT, VIC

Design an award winning picture using piecewise functions and transformations. Investigate inverse functions. Use sliders to explore continuity. Learn how to make the most of the TI-Nspire CAS technology to get your students motivated and involved in class activities.

Notes: Please bring your TI-Nspire CAS calculator or you can borrow one during the session.

Not repeated

B54 Uncovering Mathematics Misconceptions Through Classroom Discourse Using Strategic Questioning and TI Technology
Lecture
Chiu Jin Yeo - Temasek Junior College, Singapore

In the process of making sense of new ideas, students often made their own assumptions and resulted in erroneous applications. Classroom discourse involving teacher and students' questioning, supported by TI-Nspire technology is an effective way for students to uncover their misconceptions. They critique their own ideas and seek to understand concepts behind abstract mathematical ideas. In this session I will share common student misconceptions from topics such as function, graphing, inequalities and calculus, as well as on the use of strategic questions and technology that engage students to think critically about their misconceptions.

Notes: Please bring your own laptop (fully charged) installed with TI-Nspire software to this session.

Repeated as A55

B55 On Geometric Locus
Lecture
Hussein Tahir - VIC

In this seminar after discussing the importance of geometric locus, a number of historical construction problems will be considered and solved. In due course, whenever applicable teaching technology will be utilised. A series of animations will be run to demonstrate the usefulness of classroom technology in solving more challenging locus problems related to conics sections.

Repeated as F44

B56 Two Rich Trigonometric Equations
Lecture
John Kermond - John Monash Science School, VIC

A variety of methods for solving trigonometric equations of the form \(a \cos(bx) + \sin(cx) = d\) and \(acos(bx) + \cos(cx) = d\) (\(a, b, c, d \) are real numbers and \(a, b, c \neq 0\)) ‘by hand’ are presented using specific quasi-general cases and concrete examples.

Not repeated

B57 Pearson Lightbook - Supporting Good Teaching and Learning in Upcoming Senior Mathematics Courses
Workshop
Vanessa Rule - Pearson, VIC
Kerry Nagle - Pearson, VIC

Commercial Presentation

Pearson has developed a new senior secondary series for the Victorian implementation of the senior Australian Curriculum that combines research on best practice in teaching and learning with the knowledge of experienced teachers to produce a dynamic and interactive learner-focused digital resource. A key feature of this series is to present content in innovative ways that can be accessed anywhere at any time. Participants will be able to interact with the product during the session.

Notes: Bring own laptop fully charged, able to connect to wireless internet.

Not repeated

B58 2013 Specialist Mathematics Examinations
Lecture
Allason McNamara - Mount Scopus Memorial College, VIC
Dr Philip Swedosh - King David, VIC
Dean Lamson - Ballarat Clarendon College, VIC

Allason, Philip and Dean will discuss common student errors in the 2013 Specialist Mathematics examination. An analysis of the Multiple Choice section will be given; by-hand skills will be discussed and different approaches to answering the Extended Answer questions will be outlined.

Not repeated
SESSION C: 2:30pm-3:30pm Thursday 4th December

CK1  Positioning the Proficiencies
Keynote  
Dr Paul Swan - WA

The Australian Curriculum includes four proficiency strands for mathematics: Understanding, Fluency, Problem Solving and Reasoning. In this keynote Paul Swan will illustrate with practical examples how the proficiency strands and the content strands may be linked so that all levels of ability in the one class may benefit. Participants will be involved in tasks that will help them position the proficiencies front and centre when teaching mathematics.

Paul Swan has taught at primary, secondary and tertiary level, with his most recent position as senior lecturer in mathematics education at Edith Cowan University. He now spends time advising Schools and Principals on how to improve the teaching of mathematics in their schools, writes books and develops games. He was awarded his PhD in 2002 for his work on how children make computation choices and how well they execute those choices. He was recently awarded an Honorary Fellowship from the Australian Council of Educational Leadership for his work with school principals.

CK2  Positive Education in the Mathematics Classroom
Keynote  
Steve Andrew - Geelong Grammar School, VIC

The presentation will look at the way that an understanding of aspects of Positive Education as defined by Geelong Grammar School can enhance the learning of students. An outline of the Positive Education programme will be given and then a focussed look at three aspects of the programme, Mindsets, Mindfulness and Character Strengths, and how these can be used in the Mathematics classroom to improve engagement and learning. The intention is that teachers and other educators will leave the session with two useful tools that can be used immediately and other ideas for longer term development and implementation.

Steve Andrew has been teaching Mathematics, both in Australia and overseas, for the past 34 years. He has been a Head of Department, Deputy Chief Examiner for the International Baccalaureate, Deputy Principal and Head of Pastoral Care. He is currently teaching at Geelong Grammar School and most recently he has also been involved in the teaching of Positive Education principles to both students and teachers. He has a keen interest in the application of Mindfulness practices in schools.

C3  Problem Solving/Reasoning (F-3)
Workshop  
Richard Korbosky - ECU/MAWA, WA

Different ways to think is an important skill to acquire in the F-3 classroom. The importance of language and how students develop and think about the semantic structure of word problems is critical in this phase of schooling. We will utilise reasoning, language acquisition, word problems, partitioning, sorting and classifying to develop problem solving skills. Manipulatives and drawings are used to link mathematical ideas. Materials will be linked to the Australian Curriculum.

C4  Mathematical Fluency is More Than Instant Recall of Number Facts
Workshop  
Greg Butler - Camphill Primary School, VIC
Leanne Cummings - Camphill Primary School, VIC
Fiona Lindsay - Camphill Primary School, VIC

In this session we will explore a bank of quick and easy games and activities that can be used to improve mental calculation skills and conceptual understanding. Then take the next step to develop the students fluency and ability to apply these skills to new and varying contexts that involve problem solving and reasoning. Lots of fun and thinking.

Repeated as D5
This year MAV Education Consultants Jennifer Bowden and Ellen Corovic have been working with a cluster of four primary schools within the North Eastern region on a Professional Learning project. The targets of the project are to support the individual school's professional learning requirements whilst ensuring a partnership for learning between MAV and the four school. The partnership has ensured teachers share effective teaching and learning practices, along with resources, with the guidance of the MAV Education Consultants. The four schools involved in this partnership with the MAV are Albanvale Primary School, Derrimut Primary School, Stevensville Primary School and Deer Park North Primary School. In this session teachers from the schools will provide an insight into their learning journey.

**Repeated as B6**

'Evernote' is an application available on any device (Apple, Windows, IOS and Android). It helps you to ‘remember everything’. Lauren has been using this application to monitor student performance by taking photos, annotating work samples, recording conversations and getting students to create iPortfolios. Throughout this process she has worked with Michael, her Numeracy Coach, to streamline the collection of necessary assessment evidence that informs and improves future teaching. This workshop will demonstrate practical approaches for educators to use in their daily practice that will ensure accountability for all. Basic knowledge of Evernote and its functionality is recommended.

**Notes:** Participants will need to bring along a fully charged laptop or mobile device, such as an Apple iPad or Samsung Galaxy Tablet. Please ensure that 'Evernote' is installed and that you have created a free account.

**Repeated as D6**

This workshop will explore ideas for teaching Algebra in the primary school. The activities presented will include the use of ICT to explore patterns and algebraic thinking. The presentation will focus on good questioning, designed to assist students to justify their thinking in accordance with the proficiency strand of Reasoning.

**Repeated as D11**

Problem solving, often seen as a way to practise skills at the end of a unit, instead should be viewed as a vehicle to unlock students’ reasoning and critical thinking strategies. This hands-on workshop will help teachers incorporate problem solving across their regular mathematics program. Using a problem solving process developed from the work of George Polya, this workshop will provide teachers with examples of how problem solving cannot only be used to help engage students in the mathematics content of the lesson, but articulate their discoveries and begin their own inquiries into the wider mathematics curriculum.

**Repeated as D12**
C9 Making Maths Visible to Differentiate Instruction, F-8
Workshop

Anita Chin - Anita Chin Mathematics Consultancy, SA

Learning to explain and justify thinking can be a difficult process for many students. However, if we combine words, symbols and drawings in our lessons, this can help students make sense of concepts. This hands-on workshop will provide practical ideas for differentiating both the concept being taught as well as the concrete materials being used. Anita will model how she teaches directly from the online NSW Mathematics K-10 Syllabus for the Australian Curriculum using the diagrams and mathematical language featured throughout the document. Participants will engage with teaching and learning tasks that use the same resource across F-8 classrooms. BLM's provided.

Not repeated

C10 Getting Started with Sustainability and the Mathematics Curriculum
Computer Workshop

Angela Andrews - Cool Australia, VIC

Sustainability is part of every teacher’s brief - incorporating it into maths lessons is a requirement of the Australian Curriculum. Busy teachers may find this challenging or overwhelming. This workshop provides maths teachers with the complete Education for Sustainability (EfS) ‘getting started pack’. Teachers will leave with:

◊ A clear definition of what EfS is and why it is important to integrate it into teaching practices.
◊ Guidance on how and where it can be integrated into their classroom using the Australian Curriculum, include examples of best practice.
◊ A FREE Cool Australia USB filled with high quality ready-made classroom resources and hands-on activities.

Notes: Please bring a fully charged laptop or iPad, your creativity and a cheeky smile.

Repeated as D16

C11 ‘Know Thy Impact’ - Visible Learning
Workshop

Shane Ezard - Northern Bay College, VIC

Engaging, Challenging & Purposeful - Using an explicit assessment, planning, teaching and feedback cycle, that personalises instruction and sees learning through the eye of the students. A journey from teacher driven to student directed learning and data ownership.

Repeated as B11

C12 Essential Assessment - Australian Curriculum and AusVELS Assessment and Curriculum
Lecture

Andrew Spitty - Essential Assessment, VIC

Commercial Presentation

Essential Assessment provides an easy and affordable way for Australian Primary and Secondary schools to deliver a consistent and whole school approach to Australian Curriculum and AusVELS numeracy assessment, curriculum and reporting. Essential Assessment delivers a whole school approach to formative and summative assessment for Australian schools and delivers a differentiated assessment and curriculum model aligned to the content descriptions of the Australian Curriculum. The model assesses and develops student knowledge within each proficiency standard while delivering a reportable Australian Curriculum Level or AusVELS Progression Point for each student. www.essentialassessment.com.au

Repeated as F11

C13 Video Animations - A Fun Way to Teach and Learn Mathematics
Lecture

Carmen Popescu-Rose - Mathematics for Excellence, VIC

This session is intended to present an approach to teaching and learning Mathematics through the use of video animations. From the point of view of the presenter, a video animation is an excellent visual tool to deliver a lesson in a fun and interesting way and to have students as active participants in their learning. This session is intended to provide an insight into “how to produce video animations for a Mathematics classroom” using the software VideoScribe. Some of the features of video animation that will be presented are: getting started; adding text and mathematical expressions; adding graphs (CAS graphs exported from Mathematica, TI-Nspire or ClassPad) and pictures; morphing and recording voiceover or music. For those with an artistic flair, drawing own images and then importing them into the video animation will be demonstrated. In other words, creativity and imagination brought into the teaching and learning of Mathematics.

Repeated as H8
**C14**  **Geometry with Graphing Calculator for Pre-School and Primary School Students**  
**Workshop**  
**Years 1 to 5**  
*Dr Pumadevi Sivasubramaniam - Teacher Education Institut Raja Melewar Campus, Malaysia*
*Mohd Ariff Jasmi - Teacher Education Institut Raja Melewar Campus, Malaysia*
*Richma Richard - Teacher Education Institut Raja Melewar Campus, Malaysia*

The workshop is for participants who are beginners to the use of the graphing calculator. The geometry application will be covered during the workshop. The content of the workshop is to enable a teacher to equip her pre-school or primary school students to engage in creative activities using exciting dynamic geometry. You don’t have a graphing calculator - we will provide you with one to use during the workshop. Just enjoy the fun you can create in your classroom with hand-held technology.

**Notes:** Ti-NspireCX graphing calculator if they have one - if not it will be provided.

**Repeated as B12**

**C15**  **Involving Parents in Supporting Children with Their Basic Facts**  
**Lecture**  
**Years 1 to 6**  
*Colleen Monaghan - Our Lady of the Nativity Primary School Aberfeldie, VIC*

Are you looking for ways to help support students who are struggling with basic maths facts? In this session I will discuss a program I have implemented in two schools to help students who are struggling with their basic facts. Involving parents in supporting students has shown great gains for both the students and the parents. Short, sharp regular sessions run by parents have proven successful in gaining students confidence with their maths ability and also improved their skill level. This workshop will allow you to see just how easily you could implement a similar program into your school.

**Repeated as B13**

**C16**  **Problem Solving Integrating Number and Measurement**  
**Workshop**  
**Years 1 to 8**  
*Rose Golds - AUT University, New Zealand*
*Marie Hirst - Cognition Education, Auckland, New Zealand*

A hands-on practical workshop with engaging problem solving activities that integrate number and measurement.

**Repeated as D18**

**C17**  **Creative Communication in Mathematics**  
**Workshop**  
**Years 1 to 8**  
*Samantha Stewart - Waikato University, New Zealand*
*Deborah Reeves - Waikato University, New Zealand*

This workshop will cover a range of practical ideas to elicit student thinking and promote mathematical discussion. Through classroom examples and rich tasks, a variety of models and research will be explored to encourage mathematical discourse with your students. The use of digital technology in mathematics teaching and learning can motivate and engage students to think critically about their learning through reflection. You will gain the opportunity to put theory into practise to create a community of learners based on maths talk.

**Repeated as D19**

**C18**  **Teaching as Inquiry in Mathematics**  
**Workshop**  
**Years 1 to 8**  
*Louise Miller - Cognition Education, New Zealand*
*Gillian Kissling - Cognition Education, New Zealand*

Teaching as inquiry is a mechanism for on-going professional learning and productive change to our practice. Incorporating digital technologies as part of an inquiry offers new ways of learning, teaching and engaging with teachers, students and whanau. It also offers opportunities to review what is possible in terms of content and pedagogical development as well as allowing us to examine challenges within the inquiry process. Through this analysis, practical approaches to making inquiry manageable and meaningful are developed.

**Repeated as A15**

**C19**  **Teaching Fractions Developmentally**  
**Lecture**  
**Years 2 to 8**  
*Bruce Williams - VIC*

Fractions remain a mystery to most students, while the teaching of fractions is daunting to many too. We want to allow access and success for ALL students in all of mathematics, including the ‘mystery’ of fractions. Your students will absolutely understand fractions in a couple of simple engaging lessons. Teaching Fractions developmentally involves no GCF’s or LCM’s, nor are there any ‘rules’ to remember! This approach develops a complete understanding of all four operations with fractions that students enjoy and understand. “When I try to remember a rule, I forget that rule. When I understand, I can never un-understand”.

**Not repeated**
C20 The Role of Challenging Mathematical Tasks in Creating Opportunities for Student Reasoning
Lecture
Aylie Davidson - Elsternwick Primary School, VIC
Years 3 to 9

The following is a report of an exploration of what mathematical reasoning might look like in classrooms. Focussing on just one lesson in one classroom, data are presented that indicate that upper primary students are willing and able to reason for themselves, especially in classrooms in which the culture for such reasoning has been established. It seems that the opportunities to reason are a product of the tasks that are posed, the structuring of the classroom, and the willingness of the teachers to allow students to engage with the tasks themselves.

Repeated as F17

C21 Picture Puzzles
Workshop
Douglas Williams - Mathematics Centre, VIC
Years 3 to 10

One screen, two learners, concrete materials and a challenge. A new way to make use of computing devices to help students learn to work like a mathematician. More pictures than words. Multiple levels of content challenge. Mathematics that's concrete, visual and makes sense. Teaching craft that encourages mathematical conversation. Your school may have already invested in these PDF slide shows from Mathematics Centre, or you may have heard of them and want to have a closer look. This is your opportunity to explore. You will need to bring your own web-connected computing device. These will be used with a partner.

Not repeated

C22 Using Magic Tricks in the Teaching of Math
Lecture
Siqiang Fu - Fairfield Methodist School (Primary), Singapore
Pamela Foong - Fairfield Methodist School (Primary), Singapore
Pearlyn Gan - National Institute of Education, Singapore
Years 4 to 6

We conducted a study on the use of magic tricks in the teaching of mathematics. The study was conducted with Primary Five students. We wanted to find out if magic tricks helped students understand and remember the concept of average better. We also wanted to find out if the use of magic tricks motivated students in the learning of mathematics. During our presentation, we will share the magic tricks that we used as well as the results of the study.

Repeated as D22

C23 Developing Students’ Fraction Understanding Using Number Lines
Workshop
Catherine Pearn - The University of Melbourne, VIC
Dr Max Stephens - The University of Melbourne, VIC
Years 4 to 9

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 measuring, but relying on making reasonable ‘by-eye’ subdivisions. A second focus on number lines, initially involves using whole numbers and their fractional parts to develop fractional language and to articulate partitioning ideas that will later be applied to fractions themselves.

Repeated as E19

C24 Promoting and Sustaining Group Interactions
Lecture
Dr Gaye Williams - Deakin University, VIC
Years 4 to 12

We have composed the groups, chosen the task, and now what? What actions of a teacher can enrich group interactions to the extent that the class collaboratively develop new mathematical understandings? Based on her teaching, leading of professional learning, and research experiences, Gaye illustrates questions teachers can ask to continually increase the level of student thinking, comments teachers can make to stimulate group preparation for reports to the class, and comments teachers can make after a group reports to encourage the interconnecting of mathematical representations. As insights develop, students come closer to the belief that ‘Maths Rocks’.

Repeated as E21

C25 Flipping Mathematics With Adobe Presenter (Free for OSX)
Workshop
Dr Tim Kitchen - Adobe, VIC
Years 4 to 12

Commercial Presentation
Adobe Presenter is a great tool to flip the Mathematics classroom and create digital learning content. It captures your screen, your web cam image and audio and allows editing in about the same time it takes to do the presentation - amazing. The Apple OSX version is free via the App Store and is all you need to do this workshop. The full Windows version of Presenter allows users to convert PowerPoint slides into interactive online presentations.
create engaging drag and drop interactions and build effective eLearning modules that can be tracked for progress and analysed for effectiveness. What is covered during this workshop:

◊ Basic video capture techniques.
◊ Doing an effective presentation.
◊ Working the simple editing tools (3 buttons).
◊ Publishing.

Presenter is one of over 50 Adobe tools that are being used by educators all over the world to enhance creativity in the learning and teaching process. Dr Tim Kitchen is Adobe’s Senior Education Advocate for Asia Pacific. He will share the value of Presenter and touch on some of the other Adobe tools that many educators already have without realising.

Notes: A laptop with Adobe Presenter (Windows) or the free Mac version of Adobe Presenter Video Express (available via the App Store) would be beneficial but not essential for this workshop.

Repeated as B26

C26 Using Online Collaborative Learning Spaces in Mathematics Education
Workshop

Duncan Symons - The University of Melbourne, VIC

There has been much debate about integrating technology into the mathematics classroom. This workshop presents an asynchronous online collaborative learning environment. Within this environment upper primary students have participated in mathematical problem solving tasks. In project groups of four to five students have engaged in online discussion, responded and provided feedback to each other and ultimately provided their solution to one mathematical problem solving task per week for a period of ten weeks. Participants in the workshop will be introduced to the collaborative space and be given the opportunity to work through a number of the problems.

Notes: Please bring your laptops.

Repeated as A23

C27 Linking the Australasian Problem Solving Mathematical Olympiads and the Australian Curriculum Proficiencies
Workshop

Dr Anne Prescott - APSMO Inc, NSW
Jon Phegan - APSMO Inc, NSW

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 as a result the enhancement of students’ enjoyment and enthusiasm for mathematics. (APSMO Inc is a not-for-profit organisation.)

Repeated as B28

C28 Number and Algebra - How to Connect These Concepts and Let ‘Em Rock
Lecture

Ian Bull - St Kevin’s College, VIC

Number is numbers like 1, 2, 3, 0, -2, -5, fractions and decimals and surds and algebra is like a, 2a+b, x2, and other terms using pronumerals. So how and where can they come together to make sense? What’s algebra all about anyway and why do we need it? These are some of the big questions that I set myself in this year’s quest with my boys from St Kevin’s College. Join me to see what happens in the pursuit of number & algebra in a rocking relationship.

Repeated as D25

C29 Changing the Way You Teach - Our Experience of Differentiation Using Maths Pathway
Workshop

Jenny Sutton - Lavalla Catholic College Traralgon, VIC
Deborah Murrell - Lavalla Catholic College Traralgon, VIC

Using Maths Pathway, we have completely changed the way we teach. No course outline, no whiteboard lectures, no one-size-fits-all assessment. Instead, each student learns something different according to their needs, and almost every student is thriving. How did we manage the change? What is the role of the teacher now? What do the students think? Is it more or less work for the teacher? How do we report? Hear about our experiences both good and bad.

Notes: Bring your own laptop with Google Chrome installed to participate in this session.

Repeated as H19
C30 Mathematical Fibre Art Rocks
Lecture Years 5 to 12
Dr Katherine Seaton - La Trobe University, VIC

The current resurgence in interest in knitting and crochet has gripped parts of the mathematical world and led to some beautiful and informative pieces of mathematical fibre art, often based on a few simple stitches and rules for combining them. I will talk about art, craft, biology, maths, geometry and especially (Pi). You will be encouraged to begin a piece of hyperbolic crochet if you wish. Possible ways to use art in students’ maths classes - or maths in their art classes - or maths in your school’s knitting club - will be explored.

Notes: Please bring some 8 ply acrylic yarn and a crochet hook size 3-3.5 (smaller than usual size to produce tight tension) if you wish. Only double crochet is needed.
Repeated as H25

C31 The Importance of Fractions in Being a Successful Secondary Mathematics Student
Workshop Years 6 to 10
Lorraine Day - University of Notre Dame Australia, WA
Dr Derek Hurrell - University of Notre Dame, WA

It has been shown that a conceptual understanding of fractions is a good indicator of how well students will cope with high school mathematics, particularly Algebra. This session will look at some ways in which secondary teachers can assist their students to develop (or reinforce) conceptual understanding of fractions to ensure their success in later mathematics. What are the roadblocks to conceptual understanding of fractions and how might we overcome them? Why is it important?

Not repeated

C32 iPads in the Classroom
Lecture Years 6 to 12
Ro Bairstow - King’s College, Auckland, New Zealand

At the beginning of 2014, each member of my Year 10 mathematics class was asked to bring an iPad to class for the rest of the year. My talk will focus on how the technology has been used (maths apps, Dropbox, Google forms, etc) and how I have created and developed some of the resources (iBooks, websites and games) myself. I will show the effect the use of these technologies has had on my teaching and the students’ learning and how we plan to proceed in future years.

Repeated as D30

C33 Differentiation - Making a Difference at Mansfield Secondary College
Workshop Years 7 to 8
Anthea Wood - Mansfield Secondary College, VIC
Emma Griffith - Mansfield Secondary College, VIC
Bruce McInnes - Mansfield Secondary College, VIC

We recognised a need to change our teaching practice and over the past three years, have developed a differentiated curriculum for Year 7 & 8 students. We would like to share our ideas, resources, assessment materials and successes. During this session, we will present: Links to AUSVels; how to implement the program; recording results; teacher resources.

Repeated as H28

C34 Differentiating the Mixed Ability Maths Classroom: You Can Rock It!
Lecture Years 7 to 10
Meredith Plaisted - Carey Baptist Grammar School, VIC
Greg Warmbrunn - Carey Baptist Grammar School, VIC

Nothing replaces the joy on a student’s face when they “get it”. This happens so much more frequently in a differentiated maths classroom. This workshop will look at strategies which can allow you to cover your curriculum and also allow students to work in their zone of proximal development.

Repeated as B39

C35 STEM in Mathematics
Workshop Years 7 to 10
Thomas Yeo - Texas Instruments, Singapore

STEM in education has increasingly become more popular globally. In Mathematics, the STEM approach to teaching and learning makes the Math concepts more real and ‘touchable’ in the classroom. In this presentation lesson ideas will be shared on how to incorporate simple STEM ideas in the Math classroom, from the presenter’s experience in the Singapore classroom. The technology used in this session will be TI-Nspire CX CAS, with data collection tools for Science. Participants will have hands-on time to try out the student activities.

Notes: Please bring a TI-Nspire CX CAS if you have one.
Repeated as F25
C36 Cashtivity - Experiential Learning in Action
Computer Workshop Years 7 to 10

Marissa DiPasquale - Cashtivity, VIC
Nicola Harle - Cashtivity, VIC

Commercial Presentation
"Cashtivity" is an innovative free online application which allows students to collaborate in groups to build a real business. It is aligned to key numeracy and financial literacy standards. See how you can create a unique curriculum unit which engages students and enables them to develop critical thinking and complex decision making skills. Examine implementation methods that encourage creativity and improve student engagement by using real life contexts in their learning. This practical session will include:
◊ A demonstration of the Cashivity tool,
◊ The presentation of case studies; and
◊ Discussion of practical implementation steps & possibilities.

This product is available free to all schools.
Repeated as D35

C37 Is the iPad Just Another iFad for the Maths Classroom?
Lecture Years 7 to 12

Bryn Humberstone - Caulfield Grammar School, VIC
Chris McCarty - Caulfield Grammar School, VIC

Caulfield Grammar School introduced a 1:1 iPad program in 2014 for Years 7-10 and our faculty set out to use them in every Mathematics subject for genuine learning improvement. We wanted to avoid gimmicky apps that just added 'bells and whistles' for a particular lesson, and instead focus on usages that encouraged a deeper understanding or a greater exploration of serious mathematical concepts. Come and hear some of the specific ways in which we were pleasantly surprised by the iPad’s potential.

Notes: If you have an iPad feel free to bring it along, but this is not required.
Repeated as G33

C38 Mathematica for Mathematics Teachers
Lecture Years 7 to 12

John Fitzherbert - Ivanhoe Girls’ Grammar School, VIC

Wolfram Mathematica is a powerful computational tool but its usefulness as an environment for writing tests, worksheets and other resources is often under-rated. This session aims to show teachers how to use Mathematica to produce high quality resources for the classroom with ease.

Notes: Laptop with Mathematica installed highly recommended. Not essential.
Repeated as E31

C39 Engaging Learners Through Mini Whiteboards
Workshop Years 7 to 12

Tracey Blunden - Methodist Ladies’ College, VIC
Peter Mein - Methodist Ladies’ College, VIC

This hands-on workshop will demonstrate some great ideas on how to engage students using the mini whiteboards. These are simple ideas that will get all students participating in the lesson, showing their thinking. Teachers gain immediate feedback on student understanding, so that issues can be quickly addressed. They can be used for anything from basic skills to problem solving to open ended questions.

Notes: Please bring a whiteboard marker.
Not repeated

C40 Teacher Questioning in Mathematics Classes in China and Australia
Lecture Years 7 to 12

Lianchun Dong - Monash University, VIC

Asking questions is an important instructional activity frequently employed by teachers in mathematics classrooms worldwide. This presentation will compare teachers’ questioning behaviour in Australian and Chinese classrooms by examining mathematics lessons taught by four experienced junior secondary teachers. Its cross-cultural approach allows researchers and practitioners to examine teaching practices within a much broader context, and thus contributes to a deeper and more explicit understanding of teaching behaviour in the two countries. It employs new ways of analysing and coding teacher questions and prompts in cross-cultural settings. These will be summarised and discussed in this presentation.

Repeated as H33
C41 Using Dynamic Geometry Software to Animate Geometric Proofs

Computer Workshop Years 7 to 12

Dr Wee Leng Ng - Nanyang Technological University, Singapore

The role of dynamic geometry software (DGS) in creating a discovery learning environment in secondary school geometry classrooms is widely acknowledged. DGS also has the potential to provide teachers with an effective means to help students gain insight into geometric proofs of suitable mathematical results. In this workshop we shall explore the use of DGS in animating geometric proofs of Pythagoras' Theorem. The DGS used in this workshop is the TI-Nspire CAS Teacher Software.

Not repeated

C42 Teaching with the iPad

Workshop Years 7 to 12

Freda Armstrong - 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. This session includes a hands-on workshop. iPads and laptop are required for this session.

Notes: Participants own iPad and laptop are required for this session. Participants must install the Doceri App on their iPad (Free from iTunes) and install Doceri desktop (Trial) on their laptop (Free download from www.doceri.com). For questions please contact info@mathsturningpoint.com.au

Repeated as A46

C43 Ferris Wheels, Circles and Pi

Workshop Years 8 to 11

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

Find out some interesting facts about some of the world’s most famous Ferris wheels and use this context to help motivate your students to develop a conceptual understanding of Pi, finding diameters, circumferences and areas of circles, using the TI-Nspire CAS Calculator. You will also explore equations of circles, circle Geometry and Trigonometry.

Notes: Loan Calculators will be available at this session.

Repeated as B48

C44 Strategies for Improving Student Answers to Extended Response Questions and Worded Problems: One School’s Approach

Workshop Years 8 to 12

Samantha Horrocks - Werribee Secondary College, VIC

This session will introduce a range of strategies to use in the classroom to help students engage with worded questions. These strategies are being tried, tested, reviewed and adapted on a continual basis at our school with students from Years 7 to 12, in all areas of mathematics from Year 7 through to VCAL, VCE and IB. We use a variation on reciprocal teaching as a strategy for starting questions with an emphasis on explanation and vocabulary to help underpin this approach. The introduction of these methods is producing dramatic changes in our students’ comprehension and results!

Not repeated

C45 Integrating Mathematics and English, Seriously!

Workshop Years 9 to 10

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

This session shows the results of students integrating English and mathematics in a problem solving and decision making environment by examining the English material through a mathematical lens. The level of mathematics involved is far from trivial and includes game theory, combinatorial mathematics, exponentials, sequences, geometry and trigonometry to name just a few.

Repeated as E35

C46 Lesson Ideas on the Use of TI-Nspire

Computer Workshop Years 9 to 10

Caroline Tng - Raffles Girls’ School, Singapore
Tiowchoo Kwee - Hwa Chong Institution, Singapore

The launch of the new handheld TI-Nspire in April 2007 was an exciting development in Graphing Technology. Multiple representations and dynamic links enable multiple approaches to solving problems. Working documents
can also be saved, recalled, edited and transferred between handheld and computer. This is an optimal tool for concept and skill development as well as concept application in the classroom. In this workshop, participants will experience and learn how TI-Nspire was used in our Singapore classroom to enhance the teaching and learning of Mathematics. Lesson ideas will cover topics such as graphing, applications of differentiation and integration, and statistics, etc. If time permits, participants will get a chance to learn how to prepare some of these resources. The soft copies of all resources used in the workshop will be made available to participants. Target audience: Participants with some experience with graphing technology.

Repeated as F37

C47 MAV’s ‘Biggest Loser’ Gambling Project
Lecture Years 9 to 10 & VCAL
Robert Money - VIC
Donald Smith - VIC
Dr Ian Lowe - Mathematical Association of Victoria, VIC
Around 5% of adolescents are problem gamblers and schools are increasingly taking steps to deal with this issue. We will report on MAV’s school-based trials of its cross-curricular “Biggest Loser” project. The mathematics component is a 2-3 week unit that fully covers the statistics and probability in the Year 9/10 curriculum. Learning activities highlight the long term expectation of losses in gambling, in particular in sports betting and on poker machines. Key elements are the questionnaires that aim to assess changes in student attitudes to gambling. There are opportunities for wider school involvement in 2015.

Repeated as A50

C48 Get More From Your TI-Nspire CAS
Workshop Years 9 to 12
Frank Moya - Educational Consultant, VIC
This is a hands-on workshop for teachers with some previous TI-Nspire experience. In the session you will learn how to use some under-utilised features of TI-Nspire to create dynamic interactive graphs, geometric objects and computations. The functionalities that you will explore include the use of sliders, data capture and the transformations menu in ‘Graphs’ application, as well as using the ‘Notes’ application for interactive computation. You will come away from this session with ‘ready to use’ activities, and with new TI-Nspire skills.

Notes: Loan calculators will be available - or bring your own, loaded with the latest operating system.

Not repeated

C49 Geometry and Graphing on the TI-Nspire
Workshop Years 9 to 12
Tim Grabovszky - Hutchins, TAS
This hands-on workshop will teach you about the geometry tools on the TI-Nspire handheld. Learn to construct the circle geometry theorems, explore graphing, construct objects and transform them in the Cartesian plane.

Notes: If you have a TI-Nspire handheld, please bring it along, otherwise one will be provided.

Repeated as D46

C50 Differentiation Through Choice in VCE Mathematics
Lecture Years 10 to 12
Jacqui Veal - Tallangatta Secondary College, VIC
Scott Anderson - Tallangatta Secondary College, VIC
Deb Robinson - Tallangatta Secondary College, VIC
Differentiation is an essential part of any classroom but is not easily implemented for time poor teachers. We will be exploring methods of differentiation by giving choice to students in VCE/Later Years Mathematics in order to encourage self-directed learning. Various examples will be given of how a self-directed program can be implemented through innovative planning and novel ideas.

Repeated as E40

C51 Understanding Mathematics Through the Use of Graphs and Pictures
Workshop Years 10 to 12
Raymond Rozen - RMIT, VIC
Bozenna Graham - Wesley College, VIC
Commercial Presentation
In this hands-on session several activities will be investigated using TI-Nspire. We will insert images, draw the graphs and investigate and analyse the mathematical properties of several car symbols. This is achieved by using geometry and graphing functions and relations on restricted domains and using reflections of functions in the x and y axes. These tasks will be demonstrated using the latest version of TI-Nspire so bring along your handheld, laptop or iPad to see how to include these colourful demonstrations into your classroom. These activities are suitable for Years 10-12.

Not repeated
C52  The Amazing Race - Put the ‘Get Up and Go’ Back in Maths
Lecture  Years 10 to 12
Cressida Byrne - Quantum Victoria, VIC
Teachers will be inspired by this session that uses an Amazing Race format to inspire students to review and consolidate key areas in upper middle to VCE mathematics. Harnessing the power of ICT, peer collaboration, a level of competition and CAS technology, students will conquer skills and concepts essential for success in VCE Mathematics. Participants will have access to an Amazing Race excerpt and gain access to the package for use back in the classroom where the real action happens.

Not repeated

C53  2013 Math Methods Examinations
Lecture  Years 11 to 12
Allason McNamara - Mount Scopus memorial College, VIC
Mary Papp - Caulfield Grammar School, VIC
Mary and Allason will do a similar session to the 2013 MAV Meet the Examiners Lecture for Mathematical Methods CAS as well as discuss common errors from previous years.

Not repeated

C54  Teaching the Principle of Mathematical Induction in the Specialist Classroom
Lecture  Years 11 to 12
Andrew Woolley - Rosny College, TAS
The Principle of Mathematical Induction (PMI) is a formal method of proof that has applications in many areas of Mathematics. In Tasmania PMI has been taught in the Maths Specialised Syllabus in the Sequences and Series Criterion for many years and is part of the proposed ACARA Specialist Unit 2 course. In this presentation I will be examining methods of teaching PMI in the classroom, building from the idea of Recursion of Sequences (as in the proposed Victorian Specialist Units 1 Syllabus) and giving examples of its use in proving results in Sequences, Geometry and Matrices.

Repeated as G43

C55  Developing Exam Question Skills Through Reciprocal Teaching at Sunshine College
Workshop  Years 11 to 12
Graeme Newman - Sunshine College, VIC
Since 2009 Sunshine College has been developing an effective and comprehensive maths program from Years 7 to 10 and many schools across the state and country are emulating. This program has been developed from the bottom up, looking at the starting points of our students and addressing their learning needs. Now at Sunshine College we have to ask ourselves: will the proven methodologies of our program work at the VCE level? This session will look at how we have adapted Reciprocal Teaching (Reilly, Parsons and Bortolot, 2009) in an attempt to develop confidence with the sort of problems that the examiners of Mathematical Methods set, especially in the second exam. VCE students at Sunshine College mostly have an EAL background. An ability to unpack the more ‘wordy’ questions and to use a methodology to support and develop confidence is our primary aim. We are hopeful that our strategies can be employed by students in the crucial exam reading time so they can enter into a problem with heightened awareness and confidence.

Repeated as D52

C56  VCE Further and General Mathematics from 2016
Lecture  Years 11 to 12
Professor Peter Jones - Swinburne University, VIC
Beginning 2016 a new VCE mathematics curriculum will be taught in Victorian schools. In this session, the new curricula for General Mathematics 1&2 and Further Mathematics 3&4 will be discussed in terms of their relationship to the current curricula, the revised content, expected student outcomes and assessment.

Repeated as F45

C57  The Complete Bivariate Odyssey for Further Mathematics
Workshop  Years 11 to 12
Russell Brown - Educational Consultant, VIC
Hayley Dureau - Mount Waverley Secondary College, VIC
This session will look at all the major components of a bivariate data analysis applicable to both the current and VCCA Draft Consultation Further Mathematics courses to take advantage of the features of the TI-Nspire platform. It will include data transformation (linearising data), regression analyses including residual plots and subsequent mathematical analyses based on the regression equation. Also included will be health focussed bivariate examples such as life expectancy and why human babies are born ‘helpless’ that are suitable for both General Mathematics & Further Mathematics.
Notes: TI-Nspire CAS Calculators will be supplied for this session or bring your own.
Repeated as D53

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

C-D1  Maths Rocks or Maths Sucks
Lecture
Rob Vingerhoets - RVEC, VIC
For your students maths rocks or more often than not - maths sucks. Which way it goes really depends on you - the teacher. It’s your responsibility to engage the kids in maths and page 89 out of some dodgy text book is not going to cut it, so it’s all about:
1. Getting the lesson structure right;
2. Getting a context for the learning right;
3. Making it relevant/tangible and then like all good sales people.
4. Selling your product so you have them hanging out for more - and you can/should do this for all content areas of maths - even fractions/decimals and percentages as this lecture/workshop will demonstrate.
Repeated as F-G2

C-D2  The Use of Fraction Models to Develop Conceptual Understanding
Workshop
Dr Heather McMaster - University of Sydney, NSW
In this presentation the Australian Curriculum will be examined in relation to the conceptual understanding of fractions that students are expected to gain as they progress from Year 1 through to Year 7. Particular attention will be paid to the three different models used to represent fractions, namely the discrete model (including arrays), the linear model (including the number line) and the area model (including circular and rectangular models). Based on recent research, suggestions will be made concerning the sequential use of these models and how they might be integrated to achieve the relevant outcomes and elaborations of the Australian Curriculum.
Not repeated

C-D3  Keeping Problem Solving at the Centre
Workshop
Adjunct Professor Mike Clapper - Australian Mathematics Trust, ACT
This presentation will explore ways in which teachers can ensure that all students engage in problem solving and enrichment activities and why it is so important to do so. Whilst there are many resources available for problem solving and enrichment, these are often poorly sequenced and structured. The presentation will explore the use of AMT, and other, materials which are well-sequenced and aim to develop problem-solving skills and to encourage students to think mathematically.
Not repeated

C-D4  Having Some Fun With Numeracy and Maths
Workshop
Dave Tout - Australian Council for Educational Research (ACER), VIC
This popular, hands-on workshop will enable participants to 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 activities have mainly been developed for youth and adult numeracy students but are suitable for all students, especially middle years and VCAL students. Some of the activities are available free and others are available in resources sold by the MAV.
Notes: This session is repeated but as a 1 hour presentation.
Repeated as E23

C-D5  Programming Using TI-Nspire
Lecture
Mehmet Altundal - Sirius College, VIC
Programming is the latest trend in the education world. For instance primary schools in England will be taught computer programming as part of national curriculum from September 2014. Instead of just learning to use programmes created by others, it is vital that children learn to create their own programmes. In this session after learning essentials of programming we’ll learn programming TI-Nspire. The following concepts will be covered:
◊ Variables for storing information in the programs
◊ Controls & transfers for managing the flow of the program
◊ Input/output for communicating with the user
Notes: Please bring a TI-Nspire CAS (CX/Clickpad/Touchpad) calculator.
Not repeated
SESSION D: 3:50pm-4:50pm Thursday 4th December

DK1 ESTEME - Excellence in Science, Technology, Engineering and Mathematics Education - A New Partnership

Keynote

Professor David Shallcross - Melbourne School of Engineering, The University of Melbourne, VIC
Latham Burns - Abbotsford Primary School, VIC

ESTEME is a partner between engineering, science and education at the University of Melbourne and Collingwood College, Abbotsford Primary, Brunswick South Primary, Fitzroy Primary, Yarra Primary, Sacred Heart Fitzroy, Collingwood English Language School, Inner Northern Local Learning and Employment Network and Yarra Education Youth Commitment. The ESTEME partnership aims to enhance how we value and understand science, technology, engineering and mathematics within and beyond our learning community. Together, we hope to improve the quality of STEM learning and associated outcomes, improve teacher capacity and confidence, develop exciting curriculum and effective pedagogy, provide access to resources and innovative opportunities, encourage gender balance, support families and communities in embracing STEM, promote and advocate STEM disciplines and applications, including problem solving techniques and critical thinking and establish an evidence base that allows us to ‘lead the thinking’ of STEM delivery. This presentation will describe the activities of the partnership since its launch in early 2014 and its plans for the future.

David Shallcross is a Professor in the Melbourne School of Engineering. He has been active in the MAV for over ten years and served on Council for 4 years. He has authored several books and has consulted internationally on engineering curriculum design.

Latham is currently the Principal at Abbotsford Primary School. From early in his career, Latham has focused on improving the pedagogical approaches of the teaching of mathematics through various leadership roles in primary schools. Additionally, he has worked on developing teacher and leadership capacity though purposeful relationships with staff, between staff and through networks of schools. He completed a Master in School Leadership at Monash University in 2011 and continues to build teacher and leadership capacity both within his school and beyond.

D2 Contextualising Number with Measurement

Workshop

Dr Jill Cheeseman - Monash University, VIC
Dr Andrea McDonough - Australian Catholic University, VIC

This workshop will explore ways in which we can make number meaningful through measurement tasks. Working in classrooms with young children has shown us that we tend to underestimate what children can do mathematically. We may start with counting units but will explore far more complex numerical thinking as well. Some of our stories and examples of measurement in practice lead us to consider ideas of relative magnitude, margins of error, compound units and comparison by quantifying. Come and share with us some ways in which you too stimulate children’s understanding of the number system with measurement problems.

D3 Would You Rather? Authentic Tasks Matching Proficiencies

Workshop

Chris Botheras - CMB Educational Enterprises, VIC

Teachers to explore the design of problem solving to ensure that the proficiencies in the proficiency strands are developed through content tasks. Planning of tasks, with a focus on Assessment Criteria supporting teacher analysis of student learning.
D4  Google Drive - The Driver!
Lecture  Years F to 6
Chris Kellett - Melton Primary School, VIC
Brian Wheelahan - Melton Primary School, VIC
Brett Strachan - Melton Primary School, VIC

At Melton Primary School (MPS) we are very proud of our current numeracy approach. With the introduction of Google Drive across the school to support our ‘PLC’ model,’ our staff have never been better equipped to teach the individual needs of our students. We utilise Google Drive to track all students in a collaborative manner while taking collective ownership of all students within a cohort. This results in purposeful planning for all students needs and appropriate to AUSVELS. Moderating and tracking sessions are conducted on a weekly basis with teachers producing evidence to allow for a sequential transition. During this session, participants will be shown all of the tools utilised by staff at MPS and leave with a confidence to use them in their own schools.

Repeated as B4

D5  Mathematical Fluency is More Than Instant Recall of Number Facts
Workshop  Years F to 6
Greg Butler - Camphill Primary School, VIC
Leanne Cummings - Camphill Primary School, VIC
Fiona Lindsay - Camphill Primary School, VIC

In this session we will explore a bank of quick and easy games and activities that can be used to improve mental calculation skills and conceptual understanding. Then take the next step to develop the students fluency and ability to apply these skills to new and varying contexts that involve problem solving and reasoning. Lots of fun and thinking.

Repeated as C4

D6  Evernote: Tracking Student Performance
Workshop  Years F to 6
Lauren Marriott - Melton Primary School, VIC
Michael Portaro - Melton Primary School, VIC

‘Evernote’ is an application available on any device (Apple, Windows, iOS and Android). It helps you to ‘remember everything’. Lauren has been using this application to monitor student performance by taking photos, annotating work samples, recording conversations and getting students to create Iportfolios. Throughout this process she has worked with Michael, her Numeracy Coach, to streamline the collection of necessary assessment evidence that informs and improves future teaching. This workshop will demonstrate practical approaches for educators to use in their daily practice that will ensure accountability for all. Basic knowledge of Evernote and its functionality is recommended.

Notes: Participants will need to bring along a fully charged laptop or mobile device, such as an Apple iPad or Samsung Galaxy Tablet. Please ensure that ‘Evernote’ is installed and that you have created a free account.

Repeated as C6

D7  Practical Ideas to Assist with the Integration of Numeracy Across the Curriculum
Workshop  Years F to 6
Lee Blake - Beaconhills College, VIC
Hayley Johnston-Coutts - Beaconhills College, VIC

In this session work from a large research project conducted in Victoria and Queensland is presented. The focus is on numeracy across the curriculum. Here we describe the use of numeracy and how it can be incorporated during integrated units in the primary classroom. The presenters will discuss the research model as a template for designing cross curricular activities which incorporate numeracy in a real life context. We will provide real classroom examples of our experiences and demonstrate how students can be actively engaged with numeracy activities across the curriculum, building both their enjoyment and confidence within the classroom.

Not repeated

D8  Using Challenging Tasks to Develop Problem Solvers
Workshop  Years F to 6
Nadia Walker - Monash University, VIC
Christine Borcek - St Kilda Primary School, VIC
Michael Rennie - St Kilda Primary School, VIC

With “problem solving” as one of the four proficiencies in the Australian Curriculum - Mathematics, this presentation will explore the kinds of tasks that really develop good problem solvers. Through the use of challenging tasks, students develop both the mindset and the mathematical skills to tackle unfamiliar learning tasks. A series of challenging tasks will be shared and discussed from the “Encouraging Persistence, Maintaining Challenge” project.

Not repeated
D9 Engaging and Challenging Mathematically Gifted Students in the Multi-ability Classroom
Workshop Years F to 6
Penny Willoughby - Thinking Outside The Box Professional Education Services, VIC
Many capable teachers would like to better-differentiate for mathematically gifted learners in the mainstream classroom but are unsure of how to do so without planning a completely separate lesson. The answer lies in teaching open-ended lessons that cater for all abilities, including gifted students. This workshop will focus on the gifted cohort and the ‘Essentials of Planning for Open-ended Numeracy Learning’ will be exemplified through a lesson plan. Participants will then have the opportunity to modify open-ended questions to make them more engaging and challenging for gifted students. Importantly, participants will come away with practical experience they can use in their numeracy planning back in the classroom.
Repeated as H5

D10 Revitalising the Teaching of Maths
Lecture Years F to 6
Professor Philip Clarkson - Australian Catholic University, VIC
Bernadette Atkins - Holy Child Catholic Primary School, VIC
It is hard to revitalise a whole staff in their teaching of mathematics. It requires focus from the staff and a building of collegiality. But when it works it is magic. This session will report on the last 12 months of the way staff at Holy Child Primary School, Dallas have been working together on their mathematics teaching. The focus for their combined activity was “The language of mathematics”. A definite program, based loosely on the notions of action research, was devised and followed for the year. Within this program level groups and individual teachers were given flexibility as to what aspect of their teaching they worked on, as long as it could be tied back into the whole school theme for the program on language and mathematics. The role of the School Mathematics Leader, and the external mentor, evolved as the year progressed. Successes celebrated and difficulties that arose will be described using materials from the teachers.
Not repeated

D11 Exploring Patterns and Algebraic Thinking
Workshop Years F to 6
Dr Sharyn Livy - Victoria University, VIC
Dr Tracey Muir - University of Tasmania, TAS
This workshop will explore ideas for teaching Algebra in the primary school. The activities presented will include the use of ICT to explore patterns and algebraic thinking. The presentation will focus on good questioning, designed to assist students to justify their thinking in accordance with the proficiency strand of Reasoning.
Repeated as C7

D12 Problem Solving Now - Unlocking Student Potential
Workshop Years F to 6
Cassandra Lowry - Lumen Christi Catholic Primary School, VIC
Marguerite McGrath - Lumen Christi Catholic Primary School, VIC
Problem solving, often seen as a way to practise skills at the end of a unit, instead should be viewed as a vehicle to unlock students’ reasoning and critical thinking strategies. This hands-on workshop will help teachers incorporate problem solving across their regular mathematics program. Using a problem solving process developed from the work of George Polya, this workshop will provide teachers with examples of how problem solving cannot only be used to help engage students in the mathematics content of the lesson, but articulate their discoveries and begin their own inquiries into the wider mathematics curriculum.
Repeated as C8

D13 Implementing Problem-solving at Eagle Point Primary School: A Whole School Approach
Workshop Years F to 6
Anna Duncan - Eagle Point Primary School, VIC
Natalie Clarke - Eagle Point Primary School, VIC
Dr Gaye Williams - Deakin University, VIC
Anna and Nat reflect on the change process as Eagle Point Primary School introduced a whole school approach to learning mathematics through inquiry/problem-solving. They focus on the questions they asked themselves along the way: Why change? What types of structures should we put in place to increase our chances of success? What conscious steps did we take that were useful? What strategies helped? What have we achieved so far and what do we see for the future? Gaye (as external mentor) reflects on those characteristics of the school and the staff that contributed to the successes achieved so far.
Repeated as H3
D14 Why Maths Hurts
Workshop
Rhiannon Lowrey - Somerville Secondary College, VIC
This is the culmination of school based research that shows, why students are avoiding mathematics in schools, how teachers can better identify and change teaching practice to encourage students to not hate and avoid maths. 
Repeated as F10

D15 Focussing on Big Ideas to Connect Concepts, F-8
Workshop
Anita Chin - Anita Chin Mathematics Consultancy, SA
The art of teaching and learning mathematics relies on understanding it’s logical structure. It is only when teachers understand concepts deeply, that connections between concepts for students can be built. This hands-on workshop will examine a developmental sequence of the ‘big ideas’ for Number and Algebra concepts from counting in prep to ratios in Grade 8. Participants will engage with tasks that represent concepts in different ways and focus on using strategies for calculations. Language development and implementation ideas for immediate use in the classroom will be addressed. Assessment ‘for’ and ‘as’ learning will be modelled through open-ended questioning. BLM’s provided.
Not repeated

D16 Getting Started with Sustainability and the Mathematics Curriculum
Computer Workshop
Angela Andrews - Cool Australia, VIC
Sustainability is part of every teacher’s brief - incorporating it into maths lessons is a requirement of the Australian Curriculum. Busy teachers may find this challenging or overwhelming. This workshop provides maths teachers with the complete Education for Sustainability (EfS) ‘getting started pack’. Teachers will leave with:
◊ A clear definition of what EfS is and why it is important to integrate it into teaching practices.
◊ Guidance on how and where it can be integrated into their classroom using the Australian Curriculum, include examples of best practice.
◊ A FREE Cool Australia USB filled with high quality ready-made classroom resources and hands-on activities.
Notes: Please bring a fully charged laptop or iPad, your creativity and a cheeky smile.
Repeated as C10

D17 The Future of Maths Education - Adapt, Personalise and Gamify!
Lecture
Michelle Kueh - Mangahigh.com, VIC
Commercial Presentation
Have you heard of Mangahigh Maths? If not, join us to see how it’s transforming the maths classrooms in many schools! Gain some practical ideas for personalising and adapting learning for each individual student, while tracking their progress across the Australian Curriculum. Integrate true maths games and quizzes are seamlessly into your lessons, while students compete to collect medals and rise on the leaderboard! Truly, the future of maths education!
Repeated as E10

D18 Problem Solving Integrating Number and Measurement
Workshop
Rose Golds - AUT University, New Zealand
Marie Hirst - Cognition Education, Auckland, New Zealand
A hands-on practical workshop with engaging problem solving activities that integrate number and measurement.
Repeated as C16

D19 Creative Communication in Mathematics
Workshop
Samantha Stewart - Waikato University, New Zealand
Deborah Reeves - Waikato University, New Zealand
This workshop will cover a range of practical ideas to elicit student thinking and promote mathematical discussion. Through classroom examples and rich tasks, a variety of models and research will be explored to encourage mathematical discourse with your students. The use of digital technology in mathematics teaching and learning can motivate and engage students to think critically about their learning through reflection. You will gain the opportunity to put theory into practise to create a community of learners based on maths talk.
Repeated as C17
D20  Teaching Mathematics Developmentally  
Lecture  
Bruce Williams - VIC

There is a natural progression of understandings related to the teaching of mathematics. We will focus on how to teach the four operations and the developmental sequence for each and how they are all actually different ways of saying the same thing. We will investigate the mental strategies we use unconsciously every day and how to develop these skills in our students. We will provide activities to take back to the classroom as well as a formative assessment tool for recording student progress.  
Not repeated

D21  Taking Tricubes to the Limit  
Workshop  
Douglas Williams - Mathematics Centre, VIC

A mathematician's work begins with an interesting problem. The visual, kinaesthetic nature of Tricubes immediately generates student interest and the workshop reveals mathematical challenges that can be created with them. So, now the work begins. The mathematics includes 3D spatial perception, 2D representations of 3D objects, measurement of length, area and volume, number patterns such as square, triangular and cube numbers, algebraic formulas and graphs of functions - yes, there is even a hint of limits and inductive proof for Year 12. All of these will be touched on, but for the most part we will chase the number patterns and algebra  
Not repeated

D22  Using Magic Tricks in the Teaching of Math  
Lecture  
Siqiang Fu - Fairfield Methodist School (Primary), Singapore  
Pamela Foong - Fairfield Methodist School (Primary), Singapore  
Pearlyn Gan - National Institute of Education, Singapore

We conducted a study on the use of magic tricks in the teaching of mathematics. The study was conducted with Primary Five students. We wanted to find out if magic tricks helped students understand and remember the concept of average better. We also wanted to find out if the use of magic tricks motivated students in the learning of mathematics. During our presentation, we will share the magic tricks that we used as well as the results of the study.  
Repeated as C22

D23  Developing Strategies for Computational Consistency Across Years 4-12 with Wolfram Research  
Lecture  
Craig Bauling - Wolfram Research, Illinois, USA

Through leading edge technology like Wolfram|Alpha, Wolfram|Alpha Pro and Mathematica, your STEM teaching across Years 4-12 can reach new levels of consistency and depth. This seminar gives an overview for using these tools in Year 4-12 classrooms and how they can be employed to develop a strategy for computational student engagement. Topics include using www.wolframalpha.com to help early learners see that Maths Rock, using www.wolframalpha.com/pro/ to empower students to take responsibility for their learning outcomes, and using Mathematica’s free-form English language to leverage students’ interests for deeper computational exploration. We’ll highlight the vast library of pre-built learning materials, and show how built-in real-world datasets free up teacher to focus on more important tasks. Examples from the ACARA standards will be used to guide the discussion. Participants will receive session materials for later reference.  
Repeated as H15

D24  More Down to Earth Mathematics  
Workshop  
Leigh Thompson - Bairnsdale Secondary College, VIC  
Jacqui Kerr - Curtin University, VIC

This presentation is a follow up to last year’s successful “Down to Earth Mathematics”. It aims to provide a range of activities that can enthuse and excite students of all ages about mathematics. No pie-in-the-sky but a down to earth into the rocks of understanding maths matters like Pi and more. Maths Rocks but the road the learning, understanding and using maths need not be a rocky one.  
Notes: 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 H16
D25 Number and Algebra - How to Connect These Concepts and Let 'Em Rock  
Lecture  
Ian Bull - St Kevin’s College, VIC  
Years 5 to 8  
Number is numbers like 1, 2, 3, 0, -2, -5, fractions and decimals and surds and algebra is like a, 2a+b, x², and other terms using pronumerals. So how and where can they come together to make sense? What's algebra all about anyway and why do we need it? These are some of the big questions that I set myself in this year's quest with my boys from St Kevin's College. Join me to see what happens in the pursuit of number & algebra in a rocking relationship.

Repeated as C28

D26 MS Excel Skills for What Graph to Use When  
Computer Workshop  
Iqbal Hossain - The Grange P-12 College, VIC  
Rudy Birsa - Williamstown High, VIC  
Years 5 to 10  
The analysis of data can be very much facilitated by the use of MS Excel. Of particular importance is the visual representation of data. If the data can be correctly graphed it is then possible to extract some meaningful information from it. MS Excel allows for a plethora of visual representations and during this session we will be exploring the best format for some of the data sets presented. Some examples are Picture graph, Staked Bar Chart, Dot Plot, Histogram and Line of best fit, scatter plot etc. This session is particularly useful for those who would like to extract the most out of the graphing capabilities of MS Excel.  
Notes: Participants should bring a USB stick (a laptop is optional).

Repeated as H17

D27 Stop Shotgun Teaching - Start Differentiated Learning  
Lecture  
Anthony Nunan - St Patrick’s College Ballarat, VIC  
Years 5 to 12  
The greatest unfulfilled promise of technology was that we would be able to collect and use information from our students to provide a differentiated learning experience. For many years, I focused on being a better teacher and my results relied on my ability to teach. This year the focus is on my student's ability to learn. Using the most basic of tools - a Surface RT, calculator and common software - every student in my class is now on a personal journey in Maths. Students are no longer rushed, motivation and grades have risen significantly, and 'teaching' is a pleasure.  
Notes: Bring your own device (notebook/iPad/tablet), pen and paper.

Repeated as G23

D28 Developing Algebraic Thinking: Providing New Tools to Understand Mathematical Relationships  
Workshop  
George Booker - QLD  
Years 6 to 9  
This workshop will address problem solving as a basis for developing algebraic thinking with problem tasks and representations through the use of materials that allow insight into the underlying algebraic ideas and thus provide a bridge to the more formal algebra that will be developed later. As solutions are obtained and described, generalisations can be formed among related problems, and ways of thinking developed that focus on the relationships within problems, building on a search for patterns among the representations chosen for the problems and their solutions.

Repeated as H26

D29 Blasts from the Past - Engaging Activities in Maths  
Workshop  
Ken Ellis - Maths Consultant, VIC  
Rick Swan - Maths Consultant, VIC  
Years 6 to 11  
With 19 years consulting experience in New York and 50 years teaching experience between them, Rick and Ken will offer their observations of some common misconceptions and weaknesses of students and teachers noticed in Victorian Schools, while also challenging participants with some of their favourite Puzzles and Problem-Solving activities.

Repeated as A33

D30 iPads in the Classroom  
Lecture  
Ro Bairstow - King’s College, Auckland, New Zealand  
Years 6 to 12  
At the beginning of 2014, each member of my Year 10 mathematics class was asked to bring an iPad to class for the rest of the year. My talk will focus on how the technology has been used (maths apps, Dropbox, Google forms, etc) and how I have created and developed some of the resources (iBooks, websites and games) myself. I will show the effect the use of these technologies has had on my teaching and the students' learning and how we plan to proceed in future years.

Repeated as C32
D31 Teaching Negative Numbers with 100% Success!!

Workshop  
Helen King - S/E Private Tutor and Retired Teacher, VIC

Without the ability to manipulate negative numbers, the whole of algebra becomes an impossible task. This topic is vital for students but my experience as a tutor of students from many different schools is that it is poorly understood. Almost all of my students find their teacher’s explanation of operations with negative numbers VERY CONFUSING! On the other hand ALL my students find my explanation and mode of teaching this critical part of the curriculum VERY SIMPLE. I will share my methodology which is very different from the current most common method.

Repeated as F24

D32 ClassPad as a Learning Tool

Workshop  
Alastair Lupton - Le Fevre High School, SA

There are many tools that can deployed to investigate phenomena and learn about some of the big ideas in mathematics. Due to its role in assessment, for some it is easy to access a ClassPad with their classes. This workshop will look at some simple yet powerful ways that ClassPads can be put to good use as a learning tool in a middle school classroom. This session will be accessible for those familiar with basic functionality, but still ‘learning the ropes’ to some degree.

Repeated as G26

D33 Rock Mathematics Pedagogy with Some Bubble and Squeak: An Eclectic Approach

Lecture  
Rama Ramakrishnan - Elsie-Rajam Private School, WA

This is an eclectic presentation focussing on mathematical pedagogy. The presentation showcases Mathematics Teaching with Technology along with Lumeracy concept. The Australian Curriculum: Mathematics aims to ensure that students:

◊ Are confident, creative users and communicators of mathematics, able to investigate, represent and interpret situations in their personal and work lives.
◊ Develop an increasingly sophisticated understanding of mathematical concepts and fluency with processes.
◊ Recognise connections between the areas of mathematics and other disciplines and appreciate mathematics as an accessible and enjoyable discipline to study.

To achieve this, an eclectic approach in the teaching of mathematics is essential. This presentation provides some examples for a task which is not as easy as it may sound!

Notes: Ti-Nspire machines will be provided.

Repeated as H32

D34 Delivering an Online, Differentiated Curriculum

Lecture  
Andrew Burden - Albert Park College, VIC
Laura Higginbottom - Albert Park College, VIC
Joennena Vaughan - Albert Park College, VIC

At our school, we deliver a curriculum that caters for different ability levels through an online environment. Our units are designed using the principles of backwards design based on AusVELS and all content is delivered online using Google Sites templates and creating presentations and materials using Google Documents. To support staff, a number of online systems have been developed to assist with designing, teaching and reporting. Our presentation will briefly outline the context of the school in its beginning years and the process of creating and delivering curriculum on a daily basis. Included in our discussion are the practicalities of team teaching and strategies to produce online material quickly as part of a team.

Repeated as E30

D35 Cashtivity - Experiential Learning in Action

Computer Workshop  
Marissa DiPasquale - Cashtivity, VIC
Nicola Harle - Cashtivity, VIC

Commercial Presentation

“Cashtivity” is an innovative free online application which allows students to collaborate in groups to build a real business. It is aligned to key numeracy and financial literacy standards. See how you can create a unique curriculum unit which engages students and enables them to develop critical thinking and complex decision making skills. Examine implementation methods that encourage creativity and improve student engagement by using real life contexts in their learning. This practical session will include:

◊ A demonstration of the Cashtivity tool,
◊ The presentation of case studies; and
Discussion of practical implementation steps & possibilities.

This product is available free to all schools.

Repeated as C36

D36 20 is the Answer! Using Geogebra, Excel and Logo to Ask the Question!

Workshop

John Widmer - Mag-Net Online STEM Educators, VIC
Robert Money - VIC
Samantha Horrocks - Werribee Secondary College, VIC

This hands-on workshop will encourage participants to write 10 maths apps using mainly Geogebra to create open-ended scaffolding materials for tricky concepts in geometry and algebra! Workshop participants will be invited to “keep in touch” by creating an app website. No knowledge of the software will be assumed. Intending participants are invited to view some of the work that was inspired by Professor Peter Sullivan during his workshops at Werribee Secondary College by using some of the sample material located at http://scitech.net.au/maths_computes. The latest version of Geogebra and partly worked examples of Geogebra, Excel and Logo apps will be supplied.

Repeated as B41

D37 Calculating Without a Calculator

Workshop

Associate Professor Marj Horne - Australian Catholic University, VIC

Before calculators there were many other ways of performing calculations. This session will explore some of the techniques from the past. This will be of interest to extend some students.

Not repeated

D38 I Got a Job as a Maths Teacher. Now What?

Lecture

Peter Collins - Mordialloc College, VIC

A lecture/demonstration aimed at inexperienced teachers of Secondary mathematics. The presenter having thrown away careers in taxi driving, factory work and fruit picking (among others), has spent the past 25 years becoming an experienced semi competent(?) teacher of maths. He is currently a VCE Maths coordinator at a suburban secondary college. This session is aimed at providing the audience with the benefit of his experience, i.e. a journey through his career illustrating what works, what doesn’t and how to survive and thrive with both. It is an improved version of a well received session presented at the conference last year.

Not repeated

D39 Maths Problems That Rock!

Workshop

Peter Fox - Texas Instruments, VIC

What do your students do when they have finished the LHS? If your answer is RHS, then this session is not for you. Participants in this session will receive a range of rich problems with content ranging from Year 7 through to Year 12. Problems may be used as extension opportunities or assignments. Each exploration is aligned to the National Curriculum/Aus-VELS as applicable, senior examples focus mainly on content applicable to Mathematical Methods and Specialist Mathematics.

Notes: Many of the investigations incorporate the use of technology. TI-Nspire calculators will be provided, but participants are welcome to bring their own calculator or computer.

Not repeated

D40 Creative Pedagogy

Workshop

Janelle O’Neill - Mt St Michael’s College, QLD

Creativity refers to the act of producing new ideas, approaches or actions. Successful business Google identified 20% of employee’s work should be creative. This can be translated to teacher’s preparation time. Creativity requires a good knowledge of your subject and the individual learning needs of your students as well as a desire to strengthen the link between curriculum and assessment. What does creativity in the Maths Classroom look like? How do we promote intrinsic motivation and problem solving to foster creativity in students? Identify what sparks your creativity and hear about how to bring creativity to the Maths classroom!

Repeated as H34
D41 How Learning Mathematics in a Digital Environment Can Reduce Cognitive Load to Improve Student Outcomes

Workshop

Antje Leigh-Lancaster - Pearson, VIC
Vanessa Rule - Pearson, VIC

Commercial Presentation

This session will highlight what the research tells us about effective learning of mathematics (and physics) online. It will focus on how the use of worked examples, when embedded effectively in a digital environment, can reduce student cognitive load, helping the development of schemas, when introducing new concepts. In addition it will discuss the positive effect of providing learners with timely hints and feedback, and what this looks like in an online environment. This session will be of interest to people developing and/or considering adopting digital resources for teaching and learning secondary mathematics.

Notes: Bring own laptop fully charged, able to connect to wireless internet.

Repeated as G38

D42 Fractals in Nature, Science, Art and Music

Lecture

Michael Chapman - St Mark’s ACS, WA

Fractal patterns are amazing Mathematical phenomena that occur in the most surprising places in the world around us. In this session we will explore many of the natural occurrences of Fractals and how they apply to our lives. Using the TI-Nspire facilities, we will be able to explore a number of Fractal patterns, starting at a Middle School level and working up to more involved analysis. The aim of this session is to learn a bit about Fractals and take away some ideas and calculator resources to use in your classroom.

Repeated as F34

D43 Passionless Moments - Problems for Rainy Friday Afternoon

Workshop

Bruce Ruthven - Melbourne Grammar, VIC

This session will present a series of interesting and unusual problems that the presenter has used over a number of years for students in Year 8-12 that challenge the intuition of the students. Participants will work through the problems and gain an appreciation of a novel problem and solution plus get a hard copy of the problems to use the very next day! If you are sick and tired of politics and elections and want to learn something that can be used in the classroom then this is the session for you.

Repeated as G39

D44 Using a CAS Calculator to Teach Equation Solving

Workshop

Natalie Caruso - Loreto Mandeville Hall, VIC
Heather Balkin - Loreto Mandeville Hall, VIC

Whilst a CAS calculator can be used to find solutions of linear equations and simultaneous linear equations directly it can also be used to explore equation solving and particularly the process involved for solving simultaneous equations. In this session the presenters will demonstrate techniques for using a CAS calculator as a scaffolding tool for teaching equation solving.

Notes: Please bring either a Casio ClassPad or TI-Nspire CAS calculator to this session.

Repeated as G39

D45 TI-Nspire Basics for Teachers With Limited or No Previous Experience

Workshop

Frank Moya - Educational Consultant, VIC

This session is aimed at teachers with limited experience of some or all TI-Nspire applications. The session will aim to introduce the following: key features and basic navigation of TI-Nspire; simple numerical and algebraic computations in the ‘Calculator’ application; creating and analysing simple graphs of functions and other relations in the ‘Graphs’ application, and entering a statistical data set in the ‘Lists and spreadsheet’ application and using the data to create a statistical plots in the ‘Data and Statistics’ application. A set of notes will be provided to help you practise the skills introduced in the session.

Notes: Loan calculators will be available - or bring your own, loaded with the latest operating system.

Not repeated
D46 Geometry and Graphing on the TI-Nspire Workshop
Tim Grabovszky - Hutchins, TAS
This hands-on workshop will teach you about the geometry tools on the TI-Nspire handheld. Learn to construct the circle geometry theorems, explore graphing, construct objects and transform them in the Cartesian plane.

Notes: If you have a TI-Nspire handheld, please bring it along, otherwise one will be provided.
Repeated as C49

D47 VCAL and Outdoor Surveying Workshop
Julie Tillyer - VIC
Brian McKinley - VIC
Brian McKinley is a professional surveyor who has an enthusiasm to motivate reluctant mathematics students. During 2014 he offered his time and talent to run workshops to train VCAL Numeracy teachers in suitable activities for VCAL (in August and November). In this workshop he will share some of the activities presented at the workshops and teachers can try these out for themselves.
Not repeated

D48 Slot Car and Exponential Growth (For ABC Splash) Workshop
Dr Ian Lowe - Mathematical Association of Victoria, VIC
ABC Splash is a collection of educational resources available for schools (splash.abc.net.au). This presentation will highlight two recently produced by Ian in collaboration with Martin Richards (ESA) and a software developer. ‘Slot car’ is an on-screen simulation of several slot cars on a variety of track shapes. It can be played as a competitive game (to improve your time) but graphs are available to analyse performance. ‘Exponential growth and doubling time’ (http://splash.abc.net.au/res/teacher_res/14-exponential-growth.html) uses ABC videos and spreadsheets to assist learning about growth of money, populations and bacteria.
Not repeated

D49 Using Mathematica in Senior Mathematics Computer Workshop
Craig Blake - Mount Erin College, VIC
A practical session for those that are novice users of Mathematica. It will provide participants with an opportunity to learn the tips and tricks of using Mathematica as a teaching and learning tool in VCE Mathematical Methods and Further Mathematics.
Not repeated

D50 Using PowerPoint in a Senior Maths Class Computer Workshop
Dana Frantz - Ballarat High School, VIC
Giovanni Liubicich - Ballarat High School, VIC
Do you use PowerPoint as one of your learning and teaching resources in your mathematics class? Have you thought about using PowerPoint, or never considered the possibility? In this session we will demonstrate different ways we use PowerPoint to help teach mathematics to senior students. We will show you how to use animations to liven a PowerPoint presentation add a sense of movement, trace angles, draw lines and curves etc. You will also have the opportunity to consider both the advantages and disadvantages of using PowerPoint presentations in a maths class. Between us we have used PowerPoint presentations with a variety of Year 10, 11, and 12 classes.
Repeated as H41

D51 Worthwhile CAS Calculator Use in This Year’s Further Maths Exam? Workshop
Kevin McMenamin - The Peninsula School, VIC
This session will look at questions from this year’s papers and discuss how useful the CAS calculator was in determining their answers. The ideas of pre-programmed material and hints that should be recorded in the bound reference to assist calculator functionality will be addressed. The session offers a hands-on experience that 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 other means. The session is open to TI-Nspire and ClassPad users and the featured calculator will be the Casio ClassPad.
Notes: Bring along your own calculator. Some ClassPads will be available for loan.
Repeated as F42
D52 Developing Exam Question Skills Through Reciprocal Teaching at Sunshine College  
Workshop Years 11 to 12  
Graeme Newman - Sunshine College, VIC

Since 2009, Sunshine College has been developing an effective and comprehensive maths program from Years 7 to 10 and many schools across the state and country are emulating. This program has been developed from the bottom up, looking at the starting points of our students and addressing their learning needs. Now at Sunshine College we have to ask ourselves: will the proven methodologies of our program work at the VCE level? This session will look at how we have adapted Reciprocal Teaching (Reilly, Parsons and Bortolot, 2009) in an attempt to develop confidence with the sort of problems that the examiners of Mathematical Methods set, especially in the second exam. VCE students at Sunshine College mostly have an EAL background. An ability to unpack the more ‘wordy’ questions and to use a methodology to support and develop confidence is our primary aim. We are hopeful that our strategies can be employed by students in the crucial exam reading time so they can enter into a problem with heightened awareness and confidence.  
Repeated as C55

D53 The Complete Bivariate Odyssey for Further Mathematics  
Workshop Years 11 to 12  
Russell Brown - Educational Consultant, VIC  
Hayley Dureau - Mount Waverley Secondary College, VIC

This session will look at all the major components of a bivariate data analysis applicable to both the current and VCCA Draft Consultation Further Mathematics courses to take advantage of the features of the TI-Nspire platform. It will include data transformation (linearising data), regression analyses including residual plots and subsequent mathematical analyses based on the regression equation. Also included will be health focussed bivariate examples such as life expectancy and why human babies are born ‘helpless’ that are suitable for both General Mathematics & Further Mathematics.  
Notes: TI-Nspire CAS Calculators will be supplied for this session or bring your own.  
Repeated as C57

D54 5 Things VCE Teachers Get Wrong During Exam Revision  
Lecture Years 11 to 12  
Andrew Worsnop - Velvet Learning, VIC

Commercial Presentation

In my VCE classes, when exam revision came around I worried that students weren’t working hard enough, that they weren’t allocating their time effectively and that I didn’t have a lot of control when students revised different topics at the same time. In this presentation I’ll show you 5 specific techniques I used in my classes to get my students exam-ready more efficiently and effectively.  
Repeated as E44

D55 VCE Mathematics at Quantum Victoria  
Lecture Years 11 to 12  
Cressida Byrne - Quantum Victoria, VIC  
Carlie Alexander - Quantum Victoria, VIC

Commercial Presentation

Quantum Victoria is an innovative centre bringing science and mathematics education to life for students, teachers and the wider community. Participants attending this session receive an overview of Quantum Victoria’s VCE mathematics programs, which include the “Nature Through Mathematics (Further Mathematics)” and the zombie simulator, “Derive of the Dead (Methods)”. All Quantum Victoria VCE mathematics programs have an associated SAC, which is aligned with the relevant VCAA VCE Study Designs.  
Not repeated
SESSION E: 9:00am-10:00am Friday 5th December

EK1  Scratch and Edgy: Teaching Algorithmic Thinking in the Middle Years and VCE Keynote

Jennifer Palisse - Mater Christi College, VIC
Dr Steven Bird - The University of Melbourne, VIC

2015 sees the launch of an innovative new VCE subject, Algorithmics, which will include data modelling, algorithm design and high-level programming. VCE Algorithmics will make use of a new algorithm design environment called Edgy, which is an extension to block-based programming frameworks like Scratch and Snap. This session will be divided into two parts. The first will explore how algorithmics can be incorporated into the middle school mathematics classroom. We will showcase some tasks that can be used to not only introduce novice programmers to the world of algorithms, but also help to enhance student understanding of mathematical concepts. The second half of the session will introduce Edgy. We will demonstrate how it will be used to teach university-level concepts in algorithm design, and how it will enable students to transition to a conventional high-level programming language.

Notes: No previous experience with Block programming is needed. Please bring a device with Scratch installed (free to install at http://scratch.mit.edu/scratch_1.4/) so that you can participate with the activities.

Jennifer Palisse is currently the Gifted and Talented Coordinator at Mater Christi College. Her focus in the classroom is to ignite an interest in mathematics in her students by providing them with interesting, yet challenging activities. Jennifer is part of the Mathematical Methods Mathematica trial and is interested in student learning in a CAS environment.

Steven Bird is Associate Professor of Computer Science at the University of Melbourne. Together with Bernd Meyer and the VCAA, Steven is developing the new VCE Algorithmics curriculum along with the Edgy algorithm design environment. His research is in the area of computational linguistics, and he is author of a textbook on the Python programming language.

E2   Empowering Parents as Early Childhood Mathematics Educators Workshop

Jennifer Bowden - Mathematical Association of Victoria, VIC
Rose Kelly - Swinburne Prahran Community Children’s Centre, VIC
Bree Collins - Stonnington Primary School, VIC

Everyday parents pack the bags of their early learners and send them off to school. Wouldn’t it be wonderful if they could pack their little minds with the skills, concepts and attitudes to ensure they achieve success as emerging mathematicians? Jennifer Bowden (Maths Education Consultant) Rose Kelly (Early Childhood Educator and Director) and Bree Collins (Prep/Foundation Classroom Teacher) will discuss and share ideas about the way parents can become more effective ‘educators’ as they engage in mathematics through play, conversation and creativity.

Repeated as F2

E3   Our Maths Rocks - Helping Students Develop Fluency in Early Number Concepts Through Fun Activities!

Workshop

Johny Alagappan - Gilson College, VIC

Are you doing all the hard work in trying to teach Maths but always seem to end up frustrated? Learning Maths can be so much fun! Come and experience some exciting and engaging ways of helping students develop fluency in early number concepts. This workshop will cover early number growth points, identifying some difficulties students experience in developing number concepts and enhancing understanding through a variety of engaging activities. Take away a rich repertoire of activities that can be implemented in your class straight away!

Notes: Bring an open mind!

Not repeated
E4 Moving From Good to Great: F-4 Maths at Baden Powell College

Lecture

Helen Baldock - Baden Powell College, VIC
Kaye Bourke - Baden Powell College, VIC
Beth Galea - Baden Powell College, VIC

In this presentation we will share how we have improved F-4 maths data across a large college of 42 F-4 classes. Building an effective Team, working with a Critical Friend, Kathy Palmer, and utilising Back to Front Maths strategies. Identify Misconceptions, (NAPLAN) Adapt our Planning documents, Professional Learning for identified passionate teachers, Coaching, lesson demonstrations, intervention programs for below level students and differentiating lessons to cater for, at and above level students. All of these items are discussed in further detail and explained within in this presentation, helping our college move from Good to Great in F-4 Maths.

Repeated as F4

E5 Exploring Pattern and Algebra in the Early Years

Workshop

Loretta Weedon - Catholic Education Office Melbourne, VIC
Catherine Epstein - Catholic Education Office Melbourne, VIC

This workshop explores how to tap into the wonder of patterns by looking at the key ideas of Pattern and Algebra and encouraging children to think algebraically, generalising why a predictable arrangement of objects, numbers, shapes, or colours is a pattern. We will use manipulatives to explore growing patterns and investigate and choose a suitable data representation to help the children to explain or generalise the pattern in their own words, and find a rule. We will explore ways to enable or extend the task to cater for all ability levels and discuss assessment options.

Repeated as F5

E6 Lesson Study Works For Maths: What About English?

Workshop

Susie Groves - Deakin University, VIC
Dr Brian Doig - Deakin University, VIC
Kathy Palmer - Every Child Counts Numeracy Consultants, VIC
Adam Bright - Springside P-9 College, VIC

Recent trials of Japanese Lesson Study in mathematics at local schools in Melbourne have proved to be extremely productive, for both teachers and students. But the question raised by one school was “What about other subjects?” This presentation will illustrate the typical Japanese structured problem-solving research lessons that form the basis for Lesson Study in mathematics and show how this can be adapted for English lessons, and explore how Lesson Study can be used effectively for both subjects.

Not repeated

E7 A PD Model for Building Capacity to Improve Outcomes in Primary Classrooms

Workshop

Donald Eddington - Craigieburn South Primary School, VIC
Gem Bagdadi - Craigieburn South Primary School, VIC

Do you want to build the capacity and confidence of staff to teach mathematics and develop a consistent, whole school approach? This workshop provides participants with a PD model that includes an approach and a range of strategies and resources for doing just that. The session provides a balance between current research into the teaching of mathematics and practical classroom applications and activities. Also to support teachers in planning for students working below, at and above the expected level, participants will be provided with a Curriculum Map that clearly shows how mathematics concepts can be aligned and developed over time.

Notes: Please bring 2 different coloured pens and a notebook.

Repeated as A6

E8 YuMi Deadly in Special Schools

Workshop

Jan Cavanagh - Queensland University of Technology, QLD

YuMi Deadly Maths has expanded from traditional schools to Special Schools in Queensland. This session will explore in hands (and feet) on the strategies which help students with disadvantages to participate and learn about mathematics in a real way. Come prepared to participate and enjoy the learning!

Not repeated
E9 Where is the Reasoning?
Workshop
Associate Professor Colleen Vale - Deakin University, VIC
Dr Wanty Widjaja - Deakin University, VIC
Dr Sandra Herbert - Deakin University, VIC
Dr Leicha Bragg - Deakin University, VIC
Dr Esther Loong - Deakin University, VIC

In this workshop we will discuss examples of primary children's mathematical reasoning and the ways in which primary children may demonstrate mathematical reasoning. The examples and discussion will be presented so as to support teachers to recognise reasoning in their classrooms, assess children's reasoning, take action to elicit and encourage reasoning and to plan tasks for the classroom with the objective of developing children's mathematics reasoning. Material for this workshop will be drawn from our work with primary students and teachers in the Mathematical Reasoning Research Project conducted by the team at Deakin University.

Repeated as B9

E10 The Future of Maths Education - Adapt, Personalise and Gamify!
Lecture
Michelle Kueh - Mangahigh.com, VIC

Commercial Presentation

Have you heard of Mangahigh Maths? If not, join us to see how it's transforming the maths classrooms in many schools! Gain some practical ideas for personalising and adapting learning for each individual student, while tracking their progress across the Australian Curriculum. Integrate true maths games and quizzes seamlessly into your lessons, while students compete to collect medals and rise on the leaderboard! Truly, the future of maths education!

Repeated as D17

E11 How ‘Challenging Tasks’ Improved the Way We Teach Geometry
Workshop
Nadia Walker - Monash University, VIC
Linda Beadle - Benton Junior College, VIC

Are you looking for some new and exciting ways to teach geometry? Would you like to know how to successfully combine geometry tasks and problem solving? This presentation will explore and discuss a range of challenging tasks that were used in Year 3 at Benton Junior College as part of the “Encouraging Persistence, Maintaining Challenge” project. This will be a hands-on workshop with lots of ideas to implement in your own classroom.

Not repeated

E12 Mental Thinking “Using the Target Number Strategy” to Assess Students Understanding of Number
Workshop
Richard Korbosky - ECU/MAWA, WA

In the classroom we are constantly asked to gain insights as to whether students understand the mathematics they are using. This session introduces participants to the ‘target number strategy’ which is a strategy that can be developed for Year 1 to Year 8+. 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 ‘target number strategy’ include whole numbers, money, decimal numbers, indices, perimeter, area and the four operations. Mathematics ideas in this session will be linked to the Australian Curriculum.

Not repeated

E13 Improving Memory to Support Struggling Learners
Workshop
Rachael Cobham - Cognition Education, New Zealand
Raewyn Gainsford - Cognition Education, New Zealand

While exploring the key elements of memory we will consider why short term memory and working memory is so important when learning mathematics. We will then look at some of the activities and digital games that can help students improve their memory.

Repeated as G12
E14 Controversial Coops.... Solving the World’s Problems One Chicken at a Time
Workshop
Marielouise Phillips - Catholic Education Office Melbourne, VIC
Birsin Reynolds - Catholic Education Office Melbourne, VIC

This workshop will use the content area of Measurement to explore using a real-life context to develop a rich task that promotes challenge and persistence.
Repeated as B20

E15 Decimals - What’s the Point? Planning a Unit of Work for Conceptual Understanding
Workshop
Jan Walker - Catholic Education Office Melbourne, VIC
Mark Mudge - Catholic Education Office Melbourne, VIC

Through the lens of decimals, this workshop will explore the process of how to plan a unit of work that builds students’ conceptual understanding. The key mathematical ideas which underpin the learning and teaching of decimals will be investigated in line with the AusVELS Mathematics Curriculum. Common misconceptions experienced by students, assessment data to inform planning and a range of tasks which cater for differentiation, will be addressed as key elements in planning for conceptual understanding.
Repeated as A20

E16 Maths With Attitude: An Alternative to Text-based Learning
Workshop
Douglass Williams - Mathematics Centre, VIC

The Australian Curriculum: Mathematics expects “... increasingly sophisticated and refined mathematical understanding, fluency, logical reasoning, analytical thought and problem-solving skills”. Maths With Attitude offers an investigative, hands-on approach to fulfilling this objective through the context of working like a mathematician. Each kit includes twenty tasks and the suite of sixteen kits develops a sequenced core curriculum across all content and proficiency strands from Years 3-10. Skills are developed and practised in context. Access to Maths300 is not necessary, but enriches if available. Explore this resource and assess how it can support the realisation of the national curriculum.
Not repeated

E17 Draw Rotation Symmetry and Translations
Workshop
Jim Cramb - EasyDraw Products Australia, VIC
Lucy Mammides - EasyDraw Products Australia, VIC

Commercial Presentation
The MathoGraph System uses 25 shapes to create pictures, borders and patterns. After a brief overview and demonstration you will draw Rotation Symmetry and Kaleidoscope Patterns using the tools, paper and pencil provided. You will also draw and explore Translations, Reflections and the Mirror Line. Discover NEW activities to suit all abilities in your classroom. The activities will stimulate creativity, focus and deep thinking and help develop technical drawing skills. Jim will also demonstrate software which simulates the hands-on tools and accelerates the design process. For more information go to www.mathograph.com.
Repeated as H13

E18 Using MKT to Teach Proportional Reasoning
Workshop
Samantha Bothe - Victoria University, VIC

The Australian Curriculum anticipates that all students will “benefit from access to the power of mathematical reasoning and learn to apply their mathematical understanding creatively and efficiently”. How can we effectively achieve this? Through the Mathematics Knowledge for Teaching (MKT) model this workshop will explore practical activities to use in the teaching of proportional reasoning.
Repeated as A22

E19 Developing Students’ Fraction Understanding Using Number Lines
Workshop
Catherine Pearn - The University of Melbourne, VIC
Dr Max Stephens - The 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 measuring, but relying on making reasonable “by-eye” subdivisions. A second focus on number lines, initially involves using whole numbers and their fractional parts to develop fractional language and to articulate partitioning ideas that will later be applied to fractions themselves.
Repeated as C23
E20  How to Teach Decimals Better
Workshop  Years 4 to 9

Michael O’Reilly - VIC
Norrian Rundle - VIC

This presentation is based on the MY Numeracy Leader Decimals Module, plus much more. We will look at an easy to implement diagnostic test to identify common decimals misconceptions held by students. These misconceptions will be explored, as will a range of teaching strategies to address them. The concrete teaching aid, Linear Arithmetic Blocks (LABs), will be demonstrated. These can be constructed by participants and used to teach place value and decimals. Participants will receive copies of files and handouts, as well as detailed instructions for constructing the LABs.

Notes: Participants should bring along a USB Memory Stick.

Not repeated

E21  Promoting and Sustaining Group Interactions
Lecture  Years 4 to 12

Dr Gaye Williams - Deakin University, VIC

We have composed the groups, chosen the task, and now what? What actions of a teacher can enrich group interactions to the extent that the class collaboratively develop new mathematical understandings? Based on her teaching, leading of professional learning, and research experiences, Gaye illustrates questions teachers can ask to continually increase the level of student thinking, comments teachers can make to stimulate group preparation for reports to the class, and comments teachers can make after a group reports to encourage the interconnecting of mathematical representations. As insights develop, students come closer to the belief that “Maths Rocks”.

Repeated as C24

E22  Double Division
Lecture  Years 5 to 7

Dr Pumadevi Sivasubramaniam - Teacher Education Institut Raja Melewar Campus, Malaysia
Mohd Ariff Jasmi - Teacher Education Institut Raja Melewar Campus, Malaysia

This presentation explains how the traditional long division method posed difficulty for students to do division of four to six digit numbers by divisors which are two digit numbers. To help these primary school students to overcome their difficulty a method called double division was used. The extent to which this method helped the students in doing division of large numbers and the extent to which the experience of doing division enabled students to develop higher order thinking skills are described in this paper.

Not repeated

E23  Having Some Fun With Numeracy and Maths
Workshop  Years 5 to 11 (inc VCAL)

Dave Tout - Australian Council for Educational Research (ACER), VIC

This popular hands-on workshop will enable participants to 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 activities have mainly been developed for youth and adult numeracy students but are suitable for all students, especially middle years and VCAL students. Some of the activities are available free and others are available in resources sold by the MAV.

Notes: This session is repeated as an extended session.

Repeated as C-D4

E24  Computer Programming - Relevant, Inspiring and Challenging
Lecture  Years 5 to 12

Jan Honnens - Christ Church Grammar School, WA

The process of writing a computer program is very similar to the process of solving a mathematical problem. In this session we will look at how the computer programming languages Scratch and Python can be used to make the teaching and learning of mathematics more relevant, inspiring and challenging.

Notes: Please, if possible, bring a laptop with Scratch 2.0 installed (Free and available from http://scratch.mit.edu/scratch2download/)

Not repeated
E25  Maths and the Adolescent Brain - Finding a Spot Between Text, Drugs and Rock n Roll

Lecture  Years 6 to 12

Robert Park - Consultant, VIC

Unfortunately, a large number of the students we teach have had unrewarding experiences with maths. In this session we will reflect on commonly used strategies by exploring current research about the way the brain learns maths. We'll explore why each is important through the lens of how the adolescent brain learns. This session will clarify what differentiation and why it is important. Participants will find it easier to make decisions on the types and frequency of strategies used to learn concepts and practice them and be exposed to a range of strategies and resources to help design brain-specific lessons.

Repeated as A34

E26  Addressing Difficulties Students Experience with Concepts and Language Used in Numeracy Across the Curriculum

Lecture  Years 7 to 9

Craig Blake - Mount Erin College, VIC
Sandra Clarke-Jones - Mount Erin College, VIC
Janice Townsend - Mount Erin College, VIC

In this session, work from a large research project conducted in Victoria and Queensland is presented. The focus is on numeracy across the curriculum. Here we describe the use of numeracy in English and Science in secondary classrooms and demonstrate how the project has been a key element in a PLT team at Mount Erin College. You will hear from teachers who took part in the ARC Numeracy research project, a joint venture between Monash University and the Australian Catholic University. We will show you how we have taught numeracy in a context and made Maths rock.

Not repeated

E27  Purposeful Teaching of Mathematics

Workshop  Years 7 to 10

Caroline Brown - Sacré Coeur, VIC
Georgia Papadopoulos - Sacré Coeur, VIC

As research in Mathematics education has identified, students often struggle to retain concepts over the longer term, and can resort to rote learning procedures which prevents a deep understanding. We wanted students to develop a deeper and lasting understanding of mathematical concepts, a stronger connection between various areas, and greater fluency in using appropriate language to describe their understanding. This session will explore activities and resources we have used to improve student understanding as part of our involvement in a professional learning and action research project with Catholic Education Office Melbourne (CEOM) and Graduate School Of Education, University of Melbourne.

Not repeated

E28  Made by Maths - An App Developed by MAV

Workshop  Years 7 to 10

Ellen Corovic - Mathematical Association of Victoria, VIC
Helen Haralambous - Mathematical Association of Victoria, VIC

Made by Maths is an interactive App developed by the MAV in 2014. It is designed for secondary students to use on excursions (currently they are Melbourne CBD based, but more locations will be added at a later date). This session will demonstrate how to use the App and provide additional teaching tips and ideas for use in the classroom. Teachers will be provided a free download during the session and get to experience the App for themselves. Additional teacher tools have been built into the construction and these too will also be explored. Feedback from trial schools and teachers will be presented.

Notes: Please bring your smartphone or tablet to receive the free download of the App.

Repeated as F26

E29  Inter-app-tive! Multiple Representations in Mathematics

Workshop  Years 7 to 10

Shelley Cross - St Hildas School, QLD
Karleigh Hammond - St Hildas School, QLD

Interactive using APPS to create mental images = inter-app-tivity! Developing generalisations to use as tools for abstract thinking is one of the key facets of mathematics. Our short, simple animations engage our students and create mental images enabling deeper understanding of mathematical concepts, equipping them to journey more confidently into the abstract world of mathematics. We share our experiences as we delve into ways of making mathematics meaningful in an age where advances in technology constantly open exciting new opportunities. You will be given the tools to create innovative and pedagogically sound tasks for your classroom.

Notes: Please bring an iPad to the session.

Repeated as A37
E30 Delivering an Online, Differentiated Curriculum
Lecture Years 7 to 10
Andrew Burden - Albert Park College, VIC
Laura Higginbottom - Albert Park College, VIC
Joennena Vaughan - Albert Park College, VIC
At our school, we deliver a curriculum that caters for different ability levels through an online environment. Our units are designed using the principles of backwards design based on AusVELS and all content is delivered online using Google Sites templates and creating presentations and materials using Google Documents. To support staff, a number of online systems have been developed to assist with designing, teaching and reporting. Our presentation will briefly outline the context of the school in its beginning years and the process of creating and delivering curriculum on a daily basis. Included in our discussion are the practicalities of team teaching and strategies to produce online material quickly as part of a team.
Repeated as D34

E31 Mathematica for Mathematics Teachers
Lecture Years 7 to 12
John Fitzherbert - Ivanhoe Girls' Grammar School, VIC
Wolfram Mathematica is a powerful computational tool but its usefulness as an environment for writing tests, worksheets and other resources is often under-rated. This session aims to show teachers how to use Mathematica to produce high quality resources for the classroom with ease.
Notes: Laptop with Mathematica installed highly recommended. Not essential.
Repeated as C38

E32 Reasoning and Proof in Junior High School
Lecture Years 7 to 12
Dr Paul Brown - Carmel School, WA
Proof should be introduced earlier than Year 11. Martinez (http://redimat.hipatiapress.com, 2014) found that most of the 14 and 15 year old students in her study were able to construct algebraic proof, and she recommends that proof should not be restricted to geometry. This session will demonstrate some of the reasoning and proof activities that the author has found to be successful with students from Year 3 to Year 10. Reasoning and proof activities develop mathematical intuition and understanding, they make fluent use of mathematical methods and they encourage clear communication: the very things we want our students to be doing.
Repeated as A42

E33 Rock Maths Lessons With Visuals
Computer Workshop Years 7 to 12
Rodney Anderson - Moreton Bay College, QLD
John Bament - O'Loughlin Catholic College, NT
In this workshop you will learn to create dynamic files embedded with visuals that can be used with the TI-Nspire handheld or the emulator software. These visuals will support standards from the Australian Curriculum. Examples include sliders, construction, inserting and working with images, optimisation and many more. Free tests and activities that supplement class lessons will also be distributed. If you have the TI-Nspire emulator installed on your laptop, please bring it along to the workshop.
Notes: Participants may wish to bring a TI-Nspire handheld and/or personal laptop with TI-Nspire Teacher Edition software installed.
Repeated as B46

E34 Exploring Geometric Regions Using TI-Nspire and Geogebra Technology
Workshop Years 8 to 12
Roger Wander - Melbourne Graduate School of Education, VIC
In this workshop regions within the equilateral triangle and the circle will be examined. In one, the properties of an internal hexagon will be explored. In the other, the areas of the two circular segments formed by an inscribed triangle will be used to form new functions. In both cases, the groundwork for open-ended student investigations will have been constructed. It is suggested that participants bring a fully-charged laptop or iPad, etc with latest versions of the software for both technologies; but there will be benefit gained by scribing notes on the worksheet provided if that is not possible. Nspire CAS handhelds will be somewhat useful for the activities though the diagrams are very detailed. The Technology files used will be made available.
Notes: Bring your laptop and Nspire calculator.
Repeated as H36
E35 Integrating Mathematics and English, Seriously!
Workshop
Ray Williams - St Mark’s Anglican Community School, WA
This session shows the results of students integrating English and mathematics in a problem solving and decision making environment by examining the English material through a mathematical lens. The level of mathematics involved is far from trivial and includes game theory, combinatorial mathematics, exponentials, sequences, geometry and trigonometry to name just a few.
Repeated as C45

E36 What is New on the ClassPad II
Workshop
Anthony Harradine - Potts-Baker Institute, Prince Alfred College, SA
Anthony will show you the new apps on the latest OS of the ClassPad II, which include a "learn how to think about" calculus app and Picture Plot (takes the pain out of analysing images). In addition to this you will see a number of other useful enhancements.
Not repeated

E37 A Plethora of Quadratic Stuff!
Workshop
Russell Brown - Educational Consultant, VIC
Hayley Dureau - Mount Waverley Secondary College, VIC
In this session we will look at the standard “as you normally would” approach of studying quadratics as an introduction but then extend into the magic of the TI-Nspire CAS capabilities by using a variety of approaches to solving quadratics such as modelling parabolas to images with an emphasis on the turning point form, completing the square, web plots and investigating graphs of the derivative and integral of quadratic functions. You will also pick up some tricks of calculator use during the session. Examples will cover topics from middle to senior level.
Notes: TI-Nspire CAS Calculators will be supplied for this session or bring your own.
Repeated as F38

E38 Make Your ClassPad Rock in the Classroom With These Tips and Tricks
Lecture
Charlie Watson - The Tuition Centre, WA
This hands-on workshop is designed for teachers who want to be reminded (or discover) some of the very powerful features of the old and new models of the Casio ClassPad that may be useful for them and their upper school students. We will also look at new features of the latest ClassPad operating systems, 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.
Notes: You may choose to bring your own Casio ClassPad (old or new model) - a few available to loan on day.
Repeated as B51

E39 “Same or Different?” and Other VCE Appropriate Tasks
Workshop
Damian Howison - St Mary MacKillop College, VIC
This workshop is about some of the tasks I have used from the Mathematics Centre (Doug Williams) and Maths300 to provide learning experiences in Math Methods Units 1/2 where students can work like a mathematician, solve problems and construct a deep understanding of some of the important concepts introduced in the syllabus including combinatorics, probability, function, trigonometry and calculus. Allowing participants to grapple with the tasks themselves, I will illustrate ways in which I have explored the icebergs of these tasks to enable learners to encounter some of the senior mathematical concepts in a working mathematically culture.
Not repeated

E40 Differentiation Through Choice in VCE Mathematics
Lecture
Jacqui Veal - Tallangatta Secondary College, VIC
Scott Anderson - Tallangatta Secondary College, VIC
Deb Robinson - Tallangatta Secondary College, VIC
Differentiation is an essential part of any classroom but is not easily implemented for time poor teachers. We will be exploring methods of differentiation by giving choice to students in VCE/Later Years Mathematics in order to encourage self-directed learning. Various examples will be given of how a self-directed program can be implemented through innovative planning and novel ideas.
Repeated as C50
E41 Exploring Problem Solving Using Technology Applications
Workshop  
Kevin McMenamin - The Peninsula School, VIC  
Years 10 to 12
Once a mathematical problem is ‘seen’, invariably it can be solved. The use of spreadsheets and (dynamic) images help to quickly ‘visualise’ the problem, thus prompting thoughts that help to find the mathematics embedded in the question. This session is a hands-on experience that will allow you to explore some problems that are helped via the use of technology. If you do not have a device with spreadsheet or geometry capabilities, the new CAS ClassPad calculator will be available for you to use.

Notes: Bring along your own calculator. Some ClassPads will be available for loan.
Repeated as A52

E42 Units 1&2 Maths Methods for New Teachers to the Subject
Workshop  
Thanh Nguyen - Korowa Anglican Girls’ School, VIC  
Years 11 to 11
Ideal for new teachers or those who have just started teaching Maths Methods Units 1&2. This session will provide you with some useful tips, guides and resources to help you feel comfortable preparing and teaching this intense and challenging subject. The importance of technology cannot be understated so there will be demonstrations on the use of the cas calculator (and the short cuts) on specific concepts to make you feel at ease in the classroom.

Notes: Please bring fully charged CAS calculator. Please bring a USB to obtain some Maths Methods resources.
Repeated as F43

E43 For What Values of…
Workshop  
Dietmar Schaffner - Penleigh and Essendon Grammar School, VIC  
Maria Schaffner - Penleigh and Essendon Grammar School, VIC  
Years 11 to 12
Students in Year 11 and 12 Mathematical Methods often have difficulty with problems in Algebra, Functions and Calculus that require them to make generalisations based on parameters. Many of these problems begin with the phrase "For what values of…” This session explores a pedagogical approach to solving these sorts of problems using graphical representations and CAS (Casio, TI and a selection of iPad apps).
Not repeated

E44 5 Things VCE Teachers Get Wrong During Exam Revision
Lecture  
Andrew Worsnop - Velvet Learning, VIC  
Commercial Presentation  
Years 11 to 12
In my VCE classes, when exam revision came around I worried that students weren’t working hard enough, that they weren’t allocating their time effectively and that I didn’t have a lot of control when students revised different topics at the same time. In this presentation I’ll show you 5 specific techniques I used in my classes to get my students exam-ready more efficiently and effectively.
Repeated as D54

E45 Interactive Learning for VCE
Workshop  
Dr Ian Lowe - Mathematical Association of Victoria, VIC  
Commercial Presentation  
Years 11 to 12
Ian has produced hundreds of interactive diagrams using MS Excel, to match almost all of the topics in these VCE courses: Foundation Maths, General Maths, Mathematical Methods 1&2 and 3&4, and Further Mathematics. (Specialist Maths is under construction.) These will assist you to present the mathematical ideas clearly and your students to review the ideas in their own time. The spreadsheets are not just rows and columns; instead they assist understanding through diagrams that respond to the student’s input. A selection will be demonstrated covering a cross-section of content and levels. Commercial (MAV product).
Not repeated

E46 Using TI-Nspire CAS in Specialist Mathematics
Workshop  
Neale Woods - Distance Education Centre Victoria, VIC  
Years 12 to 12
In this workshop, participants will have a hands-on opportunity to learn various features of the Texas Instruments TI-Nspire calculator that can be used for the Victorian Year 12 Specialist Mathematics units. These features include complex numbers, implicit differentiation, slope fields, Euler’s Method, programming, matrix cross product, etc. The features covered in the workshop would be suitable for the equivalent level of mathematics in other states and countries.

Notes: Participants will be provided with a TI-Nspire CX calculator. Participants may bring their own TI-Nspire CX calculator or their own laptop with the TI-Nspire software.
Not repeated
SESSION F: 10:45am-11:45am Friday 5th December

**FK1  Behind and Beyond the Silicon Chip**

*Stéphanie Pradier - Australian Mathematical Sciences Institute, VIC*

Communicating the importance of mathematics can be difficult, and inspiring people with it can prove troublesome. In this talk I will share my experience of communicating mathematics - and science - to a wider audience. How telling stories and finding the human element can make all the difference.

Stéphanie has a Bachelor of Arts and a Bachelor of Science, with first class honours in physics. When not at AMSI you can find her in the kitchen, at the gym, writing code in the physics department or writing prose on her front steps. Stéphanie thinks that her love of cooking can be transposed to her love of science communication. She believes that most people are genuinely interested in science - and maths - but they may sometimes find it intimidating and inaccessible - like some food. Science and maths, however, should be accessible. And Stéphanie takes great pride in explaining scientific and mathematical ideas to people. She believes the ideas are good for you: a writer just has to make them taste good.

**F2  Empowering Parents as Early Childhood Mathematics Educators**

*Jennifer Bowden - Mathematical Association of Victoria, VIC*  
*Rose Kelly - Swinburne Prahran Community Children’s Centre, VIC*  
*Bree Collins - Stonnington Primary School, VIC*

Everyday parents pack the bags of their early learners and send them off to school. Wouldn’t it be wonderful if they could pack their little minds with the skills, concepts and attitudes to ensure they achieve success as emerging mathematicians? Jennifer Bowden (Maths Education Consultant) Rose Kelly (Early Childhood Educator and Director) and Bree Collins (Prep/Foundation Classroom Teacher) will discuss and share ideas about the way parents can become more effective “educators” as they engage in mathematics through play, conversation and creativity.  

*Repeated as E2*

**F3  It Grows: Patterns are One Part of Algebra for the Early Years**

*Associate Professor Marj Horne - Australian Catholic University, VIC*

Patterns are one of the important aspects of developing algebra in the early years - particularly growing patterns. During the session we will explore some classroom activities that can be used in this early algebra development and see some student work.  

*Repeated as G2*

**F4  Moving From Good to Great: F-4 Maths at Baden Powell College**

*Helen Baldock - Baden Powell College, VIC*  
*Kaye Bourke - Baden Powell College, VIC*  
*Beth Galea - Baden Powell College, VIC*

In this presentation we will share how we have improved F-4 maths data across a large college of 42 F-4 classes. Building an effective Team, working with a Critical Friend, Kathy Palmer, and utilising Back to Front Maths strategies. Identify Misconceptions, (NAPLAN) Adapt our Planning documents, Professional Learning for identified passionate teachers, Coaching, lesson demonstrations, intervention programs for below level students and differentiating lessons to cater for at and above level students. All of these items are discussed in further detail and explained within in this presentation, helping our college move from Good to Great in F-4 Maths.  

*Repeated as E4*

**F5  Exploring Pattern and Algebra in the Early Years**

*Loretta Weeden - Catholic Education Office Melbourne, VIC*  
*Catherine Epstein - Catholic Education Office Melbourne, VIC*

This workshop explores how to tap into the wonder of patterns by looking at the key ideas of Pattern and Algebra and encouraging children to think algebraically, generalising why a predictable arrangement of objects, numbers, shapes, or colours is a pattern. We will use manipulatives to explore growing patterns and investigate and choose a suitable data representation to help the children to explain or generalise the pattern in their own words, and find a
rule. We will explore ways to enable or extend the task to cater for all ability levels and, discuss assessment options.  

Repeated as E5

F6  Would You Rather? Authentic Tasks Matching Proficiencies  
Workshop  
Chris Botheras - CMB Educational Enterprises, VIC  
Teachers to explore the design of problem solving to ensure that the proficiencies in the proficiency strands are developed through content tasks. Planning of tasks, with a focus on Assessment Criteria supporting teacher analysis of student learning.  
Repeated as D3

F7  How to Improve Problem Solving and Develop Thinking Routines at Your School  
Workshop  
Peter Maher - Penleigh & Essendon Grammar School, VIC  
Susan Maher - Lowther Hall, VIC  
It is incumbent upon us as teachers to demonstrate to our students how to think like a mathematician - how to approach problems in a logical and systematic manner. This workshop will highlight 9 strategies that students can work through to learn how to successfully apply their acquired skills to unfamiliar situations. The session will then draw upon the experiences of a school that has adopted these thinking routines, with great success.  
Repeated as G5

F8  Teach Maths for Understanding at Primary Level  
Workshop  
Dr Ian Lowe - Mathematical Association of Victoria, VIC  
Commercial Presentation  
If you are in one of the few schools who have not yet discovered this amazing website, this is for you. Ian has created Differentiated Unit Plans for all levels. Any teacher can hyperlink to suitable resources to enable learners at all levels to be taught and to learn. Differentiation is of two kinds: open-ended tasks that provide multiple entry and exit points, and targeted teaching and learning (both hands-on and ICT). In this session the primary levels (F to 6) will be demonstrated. (MAV product)  
Not repeated

F9  Developing Geometric Reasoning Abilities Through Visualisation  
Workshop  
Dr Rebecca Seah - RMIT University, VIC  
The development of spatial sense is a key component of understanding the world around us and learning higher mathematics. Making sense of the spatial world involves an ability to visualise shapes, objects, their properties and the relationships among them. Children who are skilled in forming mental images of patterns and relationships can devise quicker solutions to problems. Using paper folding activities, this session shows how the process of creating different objects allows children to visualise shapes and their properties from different orientations, leading to better understanding of 3D objects.  
Repeated as B7

F10  Why Maths Hurts  
Workshop  
Rhiannon Lowrey - Somerville Secondary College, VIC  
This is the culmination of school based research that shows, why students are avoiding mathematics in schools, how teachers can better identify and change teaching practice to encourage students to not hate and avoid maths.  
Repeated as D14

F11  Essential Assessment - Australian Curriculum and AusVELS Assessment and Curriculum  
Lecture  
Andrew Spitty - Essential Assessment, VIC  
Commercial Presentation  
Essential Assessment provides an easy and affordable way for Australian Primary and Secondary schools to deliver a consistent and whole school approach to Australian Curriculum and AusVELS numeracy assessment, curriculum and reporting. Essential Assessment delivers a whole school approach to formative and summative assessment for Australian schools and delivers a differentiated assessment and curriculum model aligned to the content descriptions of the Australian Curriculum. The model assesses and develops student knowledge within each proficiency standard while delivering a reportable Australian Curriculum Level or AusVELS Progression Point for each student. www.essentialassessment.com.au  
Repeated as C12
F12  Getting the Most from Australia’s Premier Online Resource, Cambridge HOTmaths

Computer Workshop  Years F to 10
Victoria Cook - Cambridge University Press, NSW

Commercial Presentation
Hear the best tips and ideas from teachers around the world for using Australia’s premier online teaching and learning resource. Learn how to create online assessments, save time with the teaching programs and curriculum grids, and find out what parts HOTmaths are best for teaching, learning, and engaging your students. This session will be useful for HOTmaths users who’d like the pro tips plus new users or teachers considering HOTmaths in the future. HOTmaths covers Foundation to Year 10 and we’ll be focusing on Years 7-10 in this session.
Not repeated

F13  Card Games in the Mathematics Classroom

Workshop  Years 2 to 8
Richard Korbosky - WA

Commercial Presentation
Get your students excited to learn, think and communicate mathematically with DUALOH! maths card games: Whole numbers, Subitising, Multiplication, Fractions. Each of the four games are enjoyable, challenging and adaptable to different abilities and adapted to focus on ordering, addition, subtraction and multiplication. Come along to see how you get students to practise basic facts, focus on mathematical language, develop flexible and mental thinking strategies and most of all see mathematical concepts in a variety of ways.
Notes: Participants can bring along their iPads as well.
Repeated as B17

F14  Loving Maths! A Self-directed Learning Approach

Workshop  Years 3 to 6
Stephanie Nitschke - St Therese Primary School, VIC
Paul Noonan - St Therese Primary School, VIC
Dena Reddan - St Therese Primary School, VIC

How do you allow students to make their own discoveries in mathematics, and develop their own understanding of mathematical concepts? A self-directed approach to learning ensures all students are engaged and experience success in their investigations. It provides students with the ability to make connections between their learning and the real world. By giving students choice, they are continually challenging themselves to engage in new learning rather than repeating topics they have previously mastered. In this hands-on session participants will experience what it’s like to be part of a classroom where students take charge of their own learning.
Not repeated

F15  Rock Around the Clock - YuMi Style

Workshop  Years 3 to 7
Jan Cavanagh - Queensland University of Technology, QLD

The concept of time is one of the most difficult to teach. YuMi Deadly Maths focuses on reality, abstraction, mathematics and reflection (RAMR cycle). This workshop will explore some of the stages of abstraction which lead to a better understanding of time. Come prepared to participate and enjoy!
Not repeated

F16  Making Connections in Patterns and Algebra

Workshop  Years 3 to 8
Maria Quigley - University of Sydney, NSW

This workshop will focus on ideas you can use to help your students develop their algebraic thinking in particular in relation to patterns. Parallels will be drawn between how primary and secondary students may use algebraic symbols. It will also present ideas on ways you can help your students understand and build algebraic patterns and form connections between the different representations encountered across different year groups.
Repeated as G14

F17  The Role of Challenging Mathematical Tasks in Creating Opportunities for Student Reasoning

Lecture  Years 3 to 9
Aylie Davidson - Elsternwick Primary School, VIC

The following is a report of an exploration of what mathematical reasoning might look like in classrooms. Focussing on just one lesson in one classroom, data are presented that indicate that upper primary students are willing and able to reason for themselves, especially in classrooms in which the culture for such reasoning has been established. It seems that the opportunities to reason are a product of the tasks that are posed, the structuring of the classroom, and the willingness of the teachers to allow students to engage with the tasks themselves.
Repeated as C20
F18  Aligning Values, Energising Mathematics: How Expert Teachers Do It  
Workshop  
Dr Wee Tiong Seah - Monash University, VIC  
Years 3 to 10  
The school classroom represents a space where the culturally-based values of students and their teachers intersect. It is believed that expert teachers have honed their skills at aligning the values that are different and potentially in conflict in class. The significance of this professional craft for teachers of mathematics should not be understated, given the many students who have weak cognitive skills or negative emotional associations in relation to mathematics learning. In this workshop, we will see what expert teachers do - and explore what we can do - in the mathematics classrooms to align what are valued by all involved.  
Notes: Bring along a typed/written account of a recent mathematics lesson which went particularly well. In this episode, what did you or your students do that is different?  
Repeated as B23

F19  Teaching for Numeracy Across the Curriculum in Primary and Secondary Classrooms  
Lecture  
Associate Professor Vince Geiger - Australian Catholic University, QLD  
Anne Bennison - The University of Queensland, QLD  
Professor Helen Forgasz - Monash University, VIC  
Sarah Batch - Ferny Grove State School, QLD  
Chris Leal - Ferny Grove State School, QLD  
Leanne Reid - Ferny Grove State School, QLD  
Amy George - Ferny Grove State School, QLD  
Karissa Cooke - Tannum Sands State High School, QLD  
Belinda Redden - Tannum Sands State High School, QLD  
Years 4 to 9  
In this session work from a large research project conducted in Victoria and Queensland is presented. The focus is on teaching for numeracy across the curriculum in both primary and secondary classrooms. The aim of the project is to find ways to enhance the teaching of subjects outside of mathematics by taking advantage of numeracy opportunities as these occur. Specifically, this session will report on real teaching events drawn from Queensland classrooms by describing numeracy integrated instruction within English, Health and Physical Education and Science. The session complements other presentations at this conference, drawn from the same project but reporting on Victorian classroom experiences.  
Not repeated

F20  Measurement and Technology - Using Data Loggers  
Workshop  
Daniel Avano - Museum Victoria/Scienceworks, VIC  
Michael de Zilva - Museum Victoria/Scienceworks, VIC  
Years 5 to 8  
Data loggers are a great tool to introduce students to maths topics such as graphing and measurement. Using data loggers in the classroom, real-life data can easily be collected by students leading to some meaningful and relevant investigations of the real world. This session will show you how these ICT tools can be used by students to draw connections between real world variables that they are investigating and the properties of graphs. If you have not used data loggers in the maths classroom before, this session will introduce you to some new ideas. Participants will also be given a quick overview of new maths resources available from Museum Victoria.  
Repeated as G18

F21  Speedy Maths - A Lesson In Fluency  
Workshop  
Thao Huynh - Sunshine College, VIC  
Victor Vu - Sunshine College, VIC  
Tim Purcell - Sunshine College, VIC  
Years 5 to 9  
Here is an opportunity to explore a range of activities that have been created and used during the middle years in secondary school classes, in order to build fluency and create sound mental models for maths. Differentiated and successfully engaging, these fun and exciting activities have been valuable in improving students’ efficiency, speed and accuracy when dealing with numbers.  
Notes: Bring USB for electronic copy of resources.  
Repeated as G20

F22  All Students Learn Mathematics Better When the Work is Challenging for Them  
Lecture  
Professor Peter Sullivan - Monash University, VIC  
Years 5 to 10  
This session will present the rationale for using more challenging tasks in mathematics teaching at all levels, and will outline a lesson structure that enhances the chances that all students will engage productively in learning. Exemplars of such lessons across the Years 5-10 will be presented.  
Not repeated
F23  Maths Rocks Geography  
Lecture  
Christina Wrigley - St Andrews Lutheran College, QLD  
A journey to explore the links between mathematics and geography in the Australian Curriculum. Find out why Isaac Newton helped design shopping centres, why rivers contain π and why Everest is not the tallest mountain on earth.  
Not repeated

F24  Teaching Negative Numbers with 100% Success!!  
Workshop  
Helen King - S/E Private Tutor and Retired Teacher, VIC  
Without the ability to manipulate negative numbers, the whole of algebra becomes an impossible task. This topic is vital for students but my experience as a tutor of students from many different schools is that it is poorly understood. Almost all of my students find their teacher’s explanation of operations with negative numbers VERY CONFUSING! On the other hand ALL my students find my explanation and mode of teaching this critical part of the curriculum VERY SIMPLE. I will share my methodology which is very different from the current most common method.  
Repeated as D31

F25  STEM in Mathematics  
Workshop  
Thomas Yeo - Texas Instruments Singapore, Singapore  
STEM in education has increasingly become more popular globally. In Mathematics the STEM approach to teaching and learning makes the Math concepts more real and ‘touchable’ in the classroom. In this presentation lesson ideas will be shared on how to incorporate simple STEM ideas in the Math classroom, from the presenter’s experience in the Singapore classroom. The technology used in this session will be TI-Nspire CX CAS, with data collection tools for Science. Participants will have hands-on time to try out the student activities.  
Notes: Please bring TI-Nspire CX CAS if you have one.  
Repeated as C35

F26  Made by Maths - An App Developed by MAV  
Workshop  
Ellen Corovic - Mathematical Association of Victoria, VIC  
Helen Haralambous - Mathematical Association of Victoria, VIC  
Made by Maths is an interactive App developed by the MAV in 2014. It is designed for secondary students to use on excursions (currently they are Melbourne CBD based, but further more will be added). This session will demonstrate how to use the App and provide additional teaching tips and ideas for use in the classroom. Teachers will be provided a free download during the session and get to experience the App for themselves. Additional teacher tools have been built into the construction and these too will also be explored. Feedback from trial schools and teachers will be presented.  
Notes: Please bring your smartphone or tablet to receive the free download of the App.  
Repeated as E28

F27  Real Teachers Using Mangahigh to Improve Numeracy  
Lecture  
Bryce Dermody - Copperfield College, VIC  
Karen Martin - Copperfield College, VIC  
Commercial Presentation  
Mangahigh can be used in many different ways to engage and promote mathematical thinking in students. Learn how two everyday teachers have infused the use of Mangahigh into their classrooms. We use it for everything from setting a pre-test, getting diagnostics on what students are having trouble with, creating ways to differentiate and as a teaching tool. Would you love your students to practise their time tables? Find out how to get students practising their basic number skills and enjoy what is happening in maths.  
Not repeated

F28  Using Items From the PISA International Mathematics Assessment in Teaching  
Lecture  
Professor Kaye Stacey - The University of Melbourne, VIC  
This session will look at some of the items used in PISA 2012, the OECD’s 2012 assessment of mathematical literacy for 15 year olds. The media attention is always on the rankings and comparisons with other countries, but PISA also provides a range of resources that can be adapted for teaching and need to be better known. There are many publically released items, paper-based and computer-based, as well as frameworks to help teachers analyse the cognitive demand of mathematics items. PISA items test whether students will be able to use mathematics in their personal lives, as citizens and for work.  
Repeated as G31
F29  Whiteboarding in the Mathematics Classroom
Workshop  Years 7 to 12
Dietmar Schaffner - Penleigh and Essendon Grammar School, VIC
Maria Schaffner - Penleigh and Essendon Grammar School, VIC
This workshop will explore the opportunities that whiteboarding offers as a pedagogical technique, particularly in mathematical problem solving. Participants will be led through some sample whiteboarding activities as well as the theoretical foundations that underpin the technique. The presenters will also reflect on how whiteboarding has improved their students’ engagement, quality of discourse and setting out of solutions, as well as the immediacy and accuracy of the feedback they can offer their students. Although the sample activities will be taken from senior curriculum, they will have some application in the middle school.

F30  Assessment FOR Learning in Secondary Maths, Without Take-Home Marking
Workshop  Years 7 to 12
Heather Ernst - Kurnai College Gippsland and Federation University, VIC
Help you and your students find their mathematical strengths and weaknesses before the formal assessment. Using mini-white boards, flash cards and a variety of other methods, with a range of closed and open-ended questions, you can discover which students know what they are doing. The students’ focus changes from finishing the work, to understanding the mathematical concepts. These methods involve little preparation, increase students’ interest and increase overall test results.

F31  Mathematica: Play, Create, Learn and Problem-solve with Tessellations Using the Graphics Primitive
Computer Workshop  Years 7 to 12
Ian Willson - VIC
This workshop will provide to those with little or no previous experience of Mathematica an introduction to how the Graphics primitive can be used to draw colour polygons to use to create tiling patterns/tessellations. In the process learners will be required to use irrational numbers and coordinate pairs they compose themselves to build regular polygons for use in patterns of their choosing. The intention is to provide participants with ideas and the syntax know-how required to write basic Mathematica code for graphics. Activities will be provided for use in the workshop and for classroom use back at school.

F32  From Symmetry to Pythagoras: Teaching Geometric Proofs in AusVELS
Lecture  Years 7 to 12
Joel Smith - Maths Pathway, VIC
Dr Rebecca Ryan - Maths Pathway, VIC
Geometric proofs have been introduced in AusVELS but there aren’t adequate resources out there to support the teaching of this section of the curriculum. Two mathematicians will share the resources they have developed for practical classroom use.

F33  Mathematics of Rock Band Photography
Lecture  Years 7 to 12
Paul Pascoe - St Francis Xavier College, VIC
A lecture style presentation about the Mathematics of Photography by a professional photographer of Music and Special Events, who also works as a Maths/ICT Teacher. We will discuss the mathematics and optics of modern Digital DSLR cameras, including Lenses, Aperture, Shutter Speed, ISO sensitivity, White Balance, Colour Temperatures, Sensor Size and Pixels. Also covered are: Photo Composition Geometries, including the “Nines Rule”, Flash Photography inverse square law for light intensity and Diffusers, Digital Image Compression and File Formats, as well as optimising image size and load time for online use of images - particularly for Facebook, Instagram, and Flickr.

Notes:  My presentation will be available on my Mathematics Website (Passy’s World of Mathematics) after the Conference.

Repeated as B45

Repeated as G34

Repeated as A43
F34 Fractals in Nature, Science, Art and Music
Lecture
Michael Chapman - St Mark’s ACS, WA
Years 8 to 12
Fractal patterns are amazing Mathematical phenomena that occur in the most surprising places in the world around us. In this session we will explore many of the natural occurrences of Fractals and how they apply to our lives. Using the TI-Nspire facilities, we will be able to explore a number of Fractal patterns, starting at a Middle School level and working up to more involved analysis. The aim of this session is to learn a bit about Fractals and take away some ideas and calculator resources to use in your classroom.

Repeated as D42

F35 Questioning Probability and Statistics
Workshop
Ray Cross - St Margarets Anglican Girls School, QLD
Years 8 to 12
◊ Why do we ask questions of students?
◊ How often should we ask them?
◊ Why don’t they respond? Sometimes?
◊ What makes a good mathematics question?
◊ How should they respond?
◊ What do their responses mean?

Engage in a number of statistics and probability activities designed for the Australian Curriculum; including use of ABS data. Discover how the TI-Nspire CAS Navigator system uses questions and instant feedback to access and inform the learning of every student.

Notes: Please bring your TI-Nspire CAS calculator and laptop. Some calculators will be available.

Not repeated

F36 Roller Coaster Gradients
Workshop
Damian Howison - St Mary MacKillop College, VIC
Years 9 to 10
This workshop promises to be an interesting and hands-on way to introduce the concept of the gradient of a straight line. We would like learners to be able to handle calculations accurately but also we would like to foster deep understanding. The lesson modelled in this workshop aims to achieve both and at the same time, even though it is aimed at Year 9, we can sow the seeds of Calculus with the concept of the gradient function. Part of the lesson is very much in the style of some of the lesson genres developed and used by Prof Malcolm Swan, so learners will have the opportunity to construct or extend their understanding while the teacher can home in on the misconceptions and difficulties.

Not repeated

F37 Lesson Ideas on the use of TI-Nspire
Computer Workshop
Caroline Tng - Raffles Girls’ School, Singapore
Tiowchoo Kwee - Hwa Chong Institution, Singapore
Years 9 to 10
The launch of the new handheld TI-Nspire in April 2007 was an exciting development in Graphing Technology. Multiple representations and dynamic links enable multiple approaches to solving problems. Working documents can also be saved, recalled, edited and transferred between handheld and computer. This is an optimal tool for concept and skill development as well as concept application in the classroom. In this workshop, participants will experience and learn how TI-Nspire was used in our Singapore classroom to enhance the teaching and learning of Mathematics. Lesson ideas will cover topics such as graphing, applications of differentiation and integration, and statistics, etc. If time permits, participants will get a chance to learn how to prepare some of these resources. The soft copies of all resources used in the workshop will be made available to participants. Target audience: Participants with some experience with graphing technology.

Repeated as C46

F38 A Plethora of Quadratic Stuff!
Workshop
Russell Brown - Educational Consultant, VIC
Hayley Dureau - Mount Waverley Secondary College, VIC
Years 9 to 12
In this session we will look at the standard “as you normally would” approach of studying quadratics as an introduction but then extend into the magic of the TI-Nspire CAS capabilities by using a variety of approaches to solving quadratics such as modelling parabolas to images with an emphasis on the turning point form, completing the square, web plots and investigating graphs of the derivative and integral of quadratic functions. You will also pick up some tricks of calculator use during the session. Examples will cover topics from middle to senior level.

Notes: Ti-Nspire CAS Calculators will be supplied for this session or bring your own.

Repeated as E37
F39  Learning Function Transformations Using TI-Nspire Graphing Calculator
Workshop  Years 9 to 12
Yingru McCaughey - Hong Kong International School, Hong Kong
I would like to share how my team use TI-Nspire graphing calculator and TI Navigator system to enhance student learning in a math classroom. This workshop will be centred around activities and investigations covering the following content: transformations, graphing functions and providing different ways to understand function definition. The activities will be scaffolded so that students can become familiar with graphing functionalities in TI-Nspire and visualize the graphs of functions. Finally, I will share some ideas for graphing project using the TI-Nspire calculators.
For the outline of the workshop, please see http://prezi.com/5mxvgqaagvrw/?utm_campaign=share&utm_medium=copy&rc=ex0share
Notes: TI-Nspire Calculators will be provided for the participants to use during the session.
Not repeated

F40  Maths for Apprenticeships, Further Education and/or Work
Lecture  Years 10 to 12
Andrew Spencer - St Michaels College, SA
The Maths that will be presented is for teachers who teach those students who are looking for a career that may include: an Apprenticeship, Cadetship, Traineeship, Further Education at an RTO or who would like to begin work. These students are not interested primarily in undertaking Tertiary studies at a University but rather to further their education through a Registered Training Organisation. The most important factor in providing an education for these students is that it is relevant to their career pathway. The classroom looks completely different from the ‘traditional’ classroom but rather each individual is catered for in their preferred career choice.
Not repeated

F41  Rock Your ClassPad with BYO Functions and Programs
Lecture  Years 10 to 12
Charlie Watson - The Tuition Centre, WA
This hands-on workshop is designed for teachers who want to discover how to add more functionality to both old and new models of the Casio ClassPad. Starting with the Define command in Main, we’ll move on to explore simple, open programs saved as eActivities and conclude by learning the basics of the Program app. Sounds a bit nerdy? Maybe, but the focus will remain on math applications to help you and your upper school students become highly efficient technology users. A reasonable working knowledge of either ClassPad would be useful, though not essential, to keep up with the hands-on activities.
Notes: You may choose to bring your own Casio ClassPad (old or new model) - a few available to loan on day.
Repeated as A51

F42  Worthwhile CAS Calculator Use in This Year’s Further Maths Exam?
Workshop  Years 10 to 12
Kevin McMenamin - The Peninsula School, VIC
This session will look at questions from this year’s papers and discuss how useful the CAS calculator was in determining their answers. The ideas of pre-programmed material and hints that should be recorded in the bound reference to assist calculator functionality will be addressed. The session offers a hands-on experience that 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 other means. The session is open to TI-Nspire and ClassPad users and the featured calculator will be the Casio ClassPad
Notes: Bring along your own calculator. Some ClassPads will be available for loan.
Repeated as A51

F43  Units 1&2 Maths Methods for New Teachers to the Subject
Workshop  Years 11 to 11
Thanh Nguyen - Korowa Anglican Girls’ School, VIC
Ideal for new teachers or those who have just started teaching Maths Methods Units 1&2. This session will provide you with some useful tips, guides and resources to help you feel comfortable preparing and teaching this intense and challenging subject. The importance of technology cannot be understated so there will be demonstrations on the use of the CAS calculator (and the short cuts) on specific concepts to make you feel at ease in the classroom.
Notes: Please bring a fully charged CAS calculator. Please bring a USB to obtain some Maths Methods resources.
Repeated as E42
F44 On Geometric Locus
Lecture
Hussein Tahir - VIC
Years 11 to 12
In this seminar after discussing the importance of geometric locus, a number of historical construction problems will be considered and solved. In due course, whenever applicable teaching technology will be utilised. A series of animations will be run to demonstrate the usefulness of classroom technology in solving more challenging locus problems related to conics sections.
Repeats as B55

F45 VCE Further and General Mathematics from 2016
Lecture
Professor Peter Jones - Swinburne University, VIC
Years 11 to 12
Beginning 2016 a new VCE mathematics curriculum will be taught in Victorian schools. In this session, the new curricula for General Mathematics 1&2 and Further Mathematics 3&4 will be discussed in terms of their relationship to the current curricula, the revised content, expected student outcomes and assessment.
Repeats as C56

F46 Pearson Lightbook - Supporting Good Teaching and Learning in Upcoming Senior Mathematics Courses
Workshop
Antje Leigh-Lancaster - Pearson, VIC
Tim Carruthers - Pearson, VIC
Years 11 to 12
Commercial Presentation
Pearson has developed a new senior secondary series for the Victorian implementation of the senior Australian Curriculum that combines research on best practice in teaching and learning with the knowledge of experienced teachers to produce a dynamic and interactive learner-focused digital resource. A key feature of this series is to present content in innovative ways that can be accessed anywhere at any time. Participants will be able to interact with the product during the session.
Notes: Bring own laptop fully charged, able to connect to wireless internet.
Not repeated

SESSION F-G: 10:45am-1:10pm Friday 5th December

F-G1 Nine & Over: Adventures in Place Value
Workshop
Douglas Williams - Mathematics Centre, VIC
Years F to 6
The workshop includes a range of rich, revisitable activities designed to continuously develop Place Value, rather than ‘doing it’ in a block for two or three weeks. This approach more closely reflects the evolution and discovery of Place Value through mathematical history by creating a student-centred investigative environment. Hands-on activities, largely drawn from Calculating Changes, and software from Maths300 will be used in ways which may be new to some teachers. Problem solving situations and the concept of working like a mathematician will be central. Samples of children’s insights into understanding operations will be included.
Not repeated

F-G2 Maths Rocks or Maths Sucks
Lecture
Rob Vingerhoets - RVEC, VIC
Years F to 8
For your students maths rocks or more often than not - maths sucks. Which way it goes really depends on you - the teacher. It’s your responsibility to engage the kids in maths and page 89 out of some dodgy text book is not going to cut it, so it’s all about:
1. Getting the lesson structure right;
2. Getting a context for the learning right;
3. Making it relevant/tangible and then like all good salespeople; and
4. Selling your product so you have them hanging out for more - and you can/should do this for all content areas of maths - even fractions/decimals and percentages as this lecture/workshop will demonstrate.
Repeated as C-D1
F-G3  Investigations and the Proficiency Strand
Workshop  Years 2 to 10
  Derek Holton - VIC
This session will develop a straightforward problem to show how mathematics and an investigation develops. Reference will then be made to the Proficiency Strand and other relevant strands of the curriculum. But hopefully too you will enjoy just playing with maths.

Notes: Please bring a pen and paper. This session will be repeated with a different starting problem.
Repeated as A-B2

F-G4  Hands-on Workshop for Mathematica Beginners
Computer Workshop  Years 4 to 12
  Craig Bauling - Wolfram Research, Illinois, USA
This introductory workshop will give attendees a hands-on opportunity to create a lesson plan in Mathematica for use within their classroom. The use of ready-made resources as well as the creation of new classroom materials will be shown.

Notes: Feel free to bring your own laptops pre-loaded with Mathematica and/or a device to save the materials you create in this workshop.
Not repeated

F-G5  So This is Your First Year of Teaching…
Workshop  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 of mathematics. This seminar will explore a number of issues of interest to new teachers including motivating students, common errors, class and time management, games, puzzles, activities and resources, settling into a new school etc. Other issues may arise during the session and will also be addressed. This was a popular option when presented in 2013.

Not repeated

F-G6  Creating Math Courses with iTunes U
Workshop  Years 7 to 12
  Clare Rafferty - Ringwood Secondary College
  Kristi Usher - Ringwood Secondary College
  Donna Mackinnon - Ringwood Secondary College
In this hands-on session learners will gain an understanding of the power of creating their own courses using iTunes U course manager. With iTunes U course manager teachers can create their own courses for students to use via an idevice. Participants will learn how to create a course simply and how to tap into existing resources on iTunes stores. Participants will learn about courses that have already been created to align with the Australian Curriculum as well as starting to create their own course.

Notes: Bring your iPad and know your Apple id and password so you can create an iTunes U course, also have the latest operating system and safari updated to create a course using iTunes U course manager.
Not repeated

F-G7  Linear, Exponential and Logarithms in 10 and 10A
Workshop  Years 9 to 11
  Anthony Harradine - Potts-Baker Institute, Prince Alfred College, SA
Anthony will share a variety of resources that help students to develop sound ways-of-thinking about the fundamental ideas that underpin these areas. The engaging contexts drawn upon include the monitoring of gas wells. The resources can be used individually, or in a teaching and learning sequence that forms a ‘chapter replacement unit’. The chapter replacement unit is fully developed in a ‘published form’ and freely available for use.

Notes: If you can bring along whatever form of technology you normally use, it may be helpful.
Not repeated
SESSION G: 12:10pm-1:10pm Friday 5th December

**GK1 The Continuing Fractal Mathematics Revolution**

*Keynote*

Professor Michael Barnsley - Australian National University, ACT  
Louisa Barnsley - Australian National University, ACT

We will report on the current status of the fractal revolution, begun over thirty years ago by Mandelbrot. We will show that fractals have a very important role to play in introducing and teaching mathematics. We will explain our passion for the subject, and show how it touches upon key basic parts of mathematics. We will also present some exciting new applications, including fractal scanners and fractal Fourier series.

Michael Barnsley (B.A. 1968 Oxford University, Ph.D. 1972 University of Wisconsin) is a professor in the Mathematical Sciences Institute at the Australian National University and author of Fractals Everywhere and SuperFractals. In previous lives he was a child of a poet, a professor at Georgia Institute of Technology and an entrepreneur who founded Iterated Systems Inc. to create fractal image compression products. He is passionate about using fractal geometry in teaching Mathematics and to transform how we see Nature.

Louisa has a first class Honours Mathematics degree from Bristol University and started her professional career as a research scientist in the UK meteorological office. She moved to the USA in 1986 to join Logistics Inc, a startup software company which was successfully sold to AC Neilson. After joining Iterated Systems Inc. the fractal image compression company, she held various management roles including patent development, VP Operations and VP International Sales. Currently, Louisa is a research assistant in fractal geometry at the Australian National University and leads Frango Studios Pty Ltd in its development of the FrangoCamera and Frango Free apps. She also develops online course material for the Australian National University.

**G2 It Grows: Patterns Are One Part of Algebra for the Early Years**

*Workshop*

Associate Professor Marj Horne - Australian Catholic University, VIC

Patterns are one of the important aspects of developing algebra in the early years – particularly growing patterns. During the session we will explore some classroom activities that can be used in this early algebra development and see some student work.

Repeated as F3

**G3 Smorgasbord of Maths - What’s on the Menu Today?**

*Workshop*

June Penney - Bacchus Marsh Primary School, VIC  
Jenny Dockeary - Melton South Primary School, VIC  
Cathy Davidson - Bacchus Marsh Primary School, VIC

A collection of engaging, differentiated activities to enhance children’s mathematical understanding. Every class has a range of student abilities. As teachers the challenge is to provide an inclusive learning environment for all students. In this workshop participants will explore a variety of rich hands-on activities that we have successfully used to allow for this differentiation to occur. Activities will include games, tasks and ideas that are suitable for F-4 classes which can be also be adapted to higher levels. You will take away activities you can implement in your classes tomorrow. Come and join us!

Not repeated

**G4 The Maths Online Interview Still Rocks!**

*Workshop*

Pam Hammond - ROPA Consultancy, VIC

Is the Mathematics Online Interview (Early Years Numeracy Interview) still relevant? Does it link to the Australian Curriculum: Mathematics? Do tasks connect to the Mathematics Continuum - an online resource on the DEECD website available to all (Department, Catholic, Independent schools)? Yes! Yes! Yes! This workshop will show how these links can assist planning and also explore effective activities to move students forward in their mathematical understanding.

Repeated as H2
G5  How to Improve Problem Solving and Develop Thinking Routines at Your School
Workshop  
Peter Maher - Penleigh & Essendon Grammar School, VIC  
Susan Maher - Lowther Hall, VIC  

It is incumbent upon us as teachers to demonstrate to our students how to think like a mathematician - how to approach problems in a logical and systematic manner. This workshop will highlight 9 strategies that students can work through to learn how to successfully apply their acquired skills to unfamiliar situations. The session will then draw upon the experiences of a school that has adopted these thinking routines, with great success.

Repeated as F7

G6  All Students Learn Mathematics Better When the Work is Challenging for Them
Lecture  
Professor Peter Sullivan - Monash University, VIC  

This session will present the rationale for using more challenging tasks in mathematics teaching at all levels, and will outline a lesson structure that enhances the chances that all students will engage productively in learning. Exemplars of such lessons across the years F-6 will be presented.

Not repeated

G7  Working with Number Strategies
Workshop  
Neda Grose - VIC  

Are you teaching ‘what you know’ or teaching students ‘how to know’ in mathematics? This workshop focuses on teaching for an understanding of thinking strategies that are used to solve number problems F-6. The workshop highlights the developmental sequence of thinking strategies F-6. It will also explore the explicit modelling of these strategies across different processes. The emphasis is on the student being confident to independently select which strategy to know to use to solve a particular problem. It will also form the foundation for older students thinking when they are ‘devising their own strategies’.

Repeated as H4

G8  iPads as a Mathematics Learning Tool
Workshop  
Fiorella Soci - Caulfield Grammar, VIC  
Natalie Erwin - Caulfield Grammar, VIC  

This presentation focuses on the second year of our journey of incorporating iPads into the Mathematics Curriculum. We will share what we have done and what we have learnt along the way - the good and the not so good of using iPads in the classroom. Our presentation will highlight the use of the iPad as a learning tool; moving past the idea of just focusing on the apps, to students using the iPad as a tool for learning when presented with Mathematics investigations and student led inquiries.

Notes: Bring your iPad along so that you can look at some of the apps. Not a requirement of the presentation.

Repeated as H6

G9  Money Rocks the World
Workshop  
Shane O’Connor - Victorian Curriculum Assessment Authority (VCAA), VIC  

The MoneySmart Teaching Project is ‘rocking the numeracy world’ across Australia!! There is now a full sequence from F-10 of ‘ready to go…ready to rock’ units of work. The units cover all the required Mathematics skills, knowledge and understanding set out by AusVELS and the Australian Curriculum. Teachers, as well as students, must develop greater consumer and financial numeracy. It is critical! Current levels of financial numeracy are low amongst both young and older Australians. These units of work will help schools commence that important journey to becoming a nationally highlighted MoneySmart School. Rock Money - Don’t let it rock you!!

Repeated as H7

G10  A History of Coercion: The Military Influence on Maths Education
Lecture  
Dr Jude Ocean - RMIT University, VIC  

In this session I argue that ‘traditional’ mathematics education is military in style. I will discuss eight classroom/school practices 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. In this session, we will collectively discuss each of these eight practices and talk about what negative and positive effects they have in our own teaching.

Repeated as H9
G11  Warping the Australian Mathematics Curriculum
Lecture  
Michael O’Connor - AMSI, VIC
Years F to 12

A warp is a vertical thread that forms the basis of a weaving pattern. It is these vertical threads that hold the fabric together and give it form and structure. Similarly, there are vertical threads in mathematics that link together the horizontal layers of the yearly programs in a curriculum. During 2014, the AMSI Schools program has worked with teachers and students to identify these vertical threads in the curriculum. In doing so the basic structure of the underlying mathematics has become clearer. This session will explore how the concepts of mathematics in the curriculum build on one another to produce a coherent and durable whole.

Not repeated

G12  Improving Memory to Support Struggling Learners
Workshop  
Rachael Cobham - Cognition Education, New Zealand
Raewyn Gainsford - Cognition Education, New Zealand
Years 1 to 8

While exploring the key elements of memory we will consider why short term memory and working memory is so important when learning mathematics. We will then look at some of the activities and digital games that can help students improve their memory.

Repeated as E13

G13  Using Card Games to Promote Fluency in Basic Number Facts
Workshop  
Linda Baron - Education By Design, VIC
Years 3 to 8

Be prepared to have some fun! Together we will explore the use of card games to consolidate and promote fluency, speed and interest in learning basic number facts, for children in the classroom. We will also discuss how teacher observations and classroom conversations can assist children to reflect on their learning.

Repeated as H12

G14  Making Connections in Patterns and Algebra
Workshop  
Maria Quigley - University of Sydney, NSW
Years 3 to 8

This workshop will focus on ideas you can use to help your students develop their algebraic thinking in particular in relation to patterns. Parallels will be drawn between how primary and secondary students may use algebraic symbols. It will also present ideas on ways you can help your students understand and build algebraic patterns and form connections between the different representations encountered across different year groups.

Repeated as F16

G15  Making Mathematics Visual - The Model Method That Improves Problems Understanding and Fosters Pre-algebraic Thinking
Workshop  
Vei Li Soo - Balaklava High School, SA
Years 3 to 8

The Model Method is a visually powerful tool that enables students to understand problems involving whole numbers, fractions, ratio and percentage at a pictorial level, leading them to the abstract methods in problem-solving. At the same time, it develops deeper understanding of these concepts and proportional reasoning, and fosters pre-algebraic thinking. An essential part of the primary maths curriculum for all primary students in Singapore, the Model Method has been used successfully with struggling Mathematics students in an Australian high school.

Repeated as B22

G16  Lets Make Mathematics Rock With Problem Solving
Workshop  
Jill Peterson - Waikato University, New Zealand
Brenda Walker - Waikato University, New Zealand
Sue Bullick - Waikato University, New Zealand
Years 4 to 8

Let’s make Mathematics rock with productive talk through problem solving. This workshop will be an interactive problem solving workshop using rich tasks and parallel problems.

Repeated as B24
G17  An In-depth Look at the Mathematics Curriculum of Sunshine College  
Lecture  
Yvonne Reilly - Sunshine College, VIC  
Jodie Parsons - Sunshine College, VIC  
Sunshine College has a unique approach to mathematics. The curriculum is differentiated and students are encouraged to take responsibility for their learning. The curriculum is made up of 4 components; differentiated content, SNMY, reciprocal teaching and speedy maths.  
Not repeated

G18  Measurement and Technology - Using Data Loggers  
Workshop  
Daniel Avano - Museum Victoria/Scienceworks, VIC  
Michael de Zilva - Museum Victoria/Scienceworks, VIC  
Data loggers are a great tool to introduce students to maths topics such as graphing and measurement. Using data loggers in the classroom, real-life data can easily be collected by students leading to some meaningful and relevant investigations of the real world. This session will show you how these ICT tools can be used by students to draw connections between real world variables that they are investigating and the properties of graphs. If you have not used data loggers in the maths classroom before, this session will introduce you to some new ideas. Participants will also be given a quick overview of new maths resources available from Museum Victoria.  
Repeated as F20

G19  Fractional Knowledge as a Signpost to Algebraic Readiness  
Workshop  
Catherine Pearn - The University of Melbourne, VIC  
Dr Max Stephens - The University of Melbourne, VIC  
Arithmetical thinking about fractions alone does not help students to make the important transition to algebraic thinking in the middle years. Students need to become confident in thinking multiplicatively about fractions – not just additively. This presentation will discuss a screening test for the middle years that identifies how well students can use relational thinking and effective representations involving fractions. We will show why fractional competence is important for algebraic readiness, and how it can be identified and developed in the middle years.  
Repeated as A27

G20  Speedy Maths - A Lesson in Fluency  
Workshop  
Thao Huynh - Sunshine College, VIC  
Victor Vu - Sunshine College, VIC  
Tim Purcell - Sunshine College, VIC  
Here is an opportunity to explore a range of activities that have been created and used during the middle years in secondary school classes, in order to build fluency and create sound mental models for maths. Differentiated and successfully engaging, these fun and exciting activities have been valuable in improving students’ efficiency, speed and accuracy when dealing with numbers.  
Notes: Bring USB for electronic copy of resources.  
Repeated as F21

G21  When Are We Going To Use This?  
Lecture  
Adjunct Professor Mike Clapper - Australian Mathematics Trust, ACT  
This presentation explores ways in which we might answer this question in a practical way, emphasising the dangers of maths teaching becoming an exercise in technical skill development at the expense of problem solving and problem formulation. Although there is a philosophical element to this discussion, the emphasis is on practical pedagogies which engage students in the mathematical narrative.  
Repeated as A28

G22  The Joy of Informatics  
Lecture  
Jan Honnens - Christ Church Grammar School, WA  
Informatics is mathematics related to computer programming and includes topics such as algorithms, networks and logic. In this session we will go through some of the past questions from the Australian Informatics Competition and the Australian Informatics Olympiad to appreciate the relevance and elegance of this kind of modern mathematics.  
Notes: Participants will benefit from having attempted the practice papers available at www.amt.edu.au/aicsample.html prior to the session.  
Not repeated
G23 Stop Shotgun Teaching - Start Differentiated Learning
Lecture Years 5 to 12
Anthony Nunan - St Patrick’s College Ballarat, VIC
The greatest unfulfilled promise of technology was that we would be able to collect and use information from our students to provide a differentiated learning experience. For many years, I focused on being a better teacher and my results relied on my ability to teach. This year the focus is on my student's ability to learn. Using the most basic of tools - a Surface RT, calculator and common software - every student in my class is now on a personal journey in Maths. Students are no longer rushed, motivation and grades have risen significantly, and ‘teaching’ is a pleasure.
Notes: Bring your own device (notebook/iPad/tablet), pen and paper.
Repeated as D27

G24 National Sport Museum Resources
Workshop Years 5 to 12
Dr Ian Lowe - Mathematical Association of Victoria, VIC
Ian has been producing electronic and paper resources for the National Sports Museum, located at the MCG. The free electronic resources are located on the NSM website (www.nsm.org.au) and are designed to help relate mathematics to a wide variety of the sports available at the NSM. The resources may be downloaded and used at schools anywhere. The AusVELS content is referenced.
Not repeated

G25 Mathematics of Rock Music
Lecture Years 7 to 10
Adam Kruger - Lyndhurst Secondary College, VIC
Scott Rumble - Lyndhurst Secondary College, VIC
Presentation about the Mathematics of Rock Music by two professional rock musicians who also work as Mathematic Teachers. The presentation will exhibit a mathematic program that we have built at our college where students complete various tasks that entail a combination of skill development and application tasks. Topics are linked to real world ideas making work relevant and link in to student's world, thus engaging students and motivating their learning.
Notes: Please bring your iPad if available.
Repeated as B37

G26 ClassPad as a Learning Tool
Workshop Years 7 to 10
Alastair Lupton - Le Fevre High School, SA
There are many tools that can deployed to investigate phenomena and learn about some of the big ideas in mathematics. Due to its role in assessment, for some it is easy to access a ClassPad with their classes. This workshop will look at some simple yet powerful ways that ClassPads can be put to good use as a learning tool in a middle school classroom. This session will be accessible for those familiar with basic functionality, but still ‘learning the ropes’ to some degree.
Repeated as D32

G27 From Geometry to Algebra with Polygons
Lecture Years 7 to 10
Andrea van Graan - St Mark’s Anglican Community School, WA
This session will look at how facilities on the CAS calculator and the TI-Nspire Navigator can be used to help students investigate internal and external angles of polygons. Interactive notes and spread sheets will be used to help students discover the rules and patterns involved.
Repeated as A38

G28 How to Learn Math - Professor Jo Boaler MOOC (Stanford)
Workshop Years 7 to 10
Caroline Brown - Sacré Cœur, VIC
Georgia Papadopoulos - Sacré Cœur, VIC
Last year Professor Jo Boaler from Stanford University ran a Massive Open Online Course (MOOC) entitled How to Learn Math, for parents and teachers. Along with 40,000 people worldwide, we completed the course and have used a number of her ideas from this MOOC in our classes. We will share what we have done, the resources we have used and how we feel this has helped to improve our teaching practice and our students' understanding.
Not repeated
G29  An Assessment Framework for Mathematics Teachers
Lecture Year 7 to 10

Rohani Mohamad - Minaret College, VIC
This presentation is planned to achieve two goals. First, it aims to summarise a review of literature that may have directly and indirectly impacted teachers’ assessment practices. Since there are multiple variables that teachers need to consider in planning and executing their assessments, as well as recording and reporting the students’ achievements, this presentation will elaborate an assessment framework that consists of three facets: (a) purposes (why we assess); (b) targets (what are we assessing); and (c) strategies (how do we assess) of assessment. Second, the presentation offers relevant findings from four Victorian teachers who participated in my study. The study investigated how and why these secondary mathematics teachers assessed their students in the ways they did.

Notes: Bring a USB for any handouts in digital format.
Not repeated

G30  Need to Rock? Take a Tablet!
Lecture Year 7 to 10

Brian Hodgson - Independent consultant, VIC
The keys to improved learning outcomes in Mathematics are context and technology. Whether you link ‘rock’ with music, geology or something else, rich contexts abound which relate interesting and realistic data and situations to learning outcomes in Years 7 to 10. Many schools are turning to android tablets and iPads as their principal technology hardware and these, together with mobile telephone, are the technology tools used to demonstrate how technology enhances the investigation of the contexts in this presentation. WolframAlpha will be used as the enabling software but no prior knowledge will be assumed.

Notes: If you have a tablet with WolframAlpha installed it will be useful, but not necessary, to bring it to the session.
Not repeated

G31  Using Items From the PISA International Mathematics Assessment in Teaching
Lecture Year 7 to 11

Professor Kaye Stacey - The University of Melbourne, VIC
This session will look at some of the items used in PISA 2012, the OECD’s 2012 assessment of mathematical literacy for 15 year olds. The media attention is always on the rankings and comparisons with other countries, but PISA also provides a range of resources that can be adapted for teaching and need to be better known. There are many publically released items, paper-based and computer-based, as well as frameworks to help teachers analyse the cognitive demand of mathematics items. PISA items test whether students will be able to use mathematics in their personal lives, as citizens and for work.

Repeated as F28

G32  The Australian TI Activities Website
Workshop Year 7 to 11

Neale Woods - Distance Education Centre Victoria, VIC
The Texas Instruments Australia TI Activities website has been designed to provide teachers with a range of calculator lessons that align with various strands in the Australian National Curriculum. Each activity consists of a package containing a teacher notes document, a student activity document, and other files that are appropriate to the activity. In this workshop, participants will learn how to access and download these activities. Participants will then have a hands-on opportunity to trial several of the activities.

Notes: Participants will be provided with a TI-Nspire CX calculator. Participants may bring their own TI-Nspire CX calculator or their own laptop with the TI-Nspire software.
Not repeated

G33  Is the iPad Just Another iFad for the Maths Classroom?
Lecture Year 7 to 12

Bryn Humberstone - Caulfield Grammar School, VIC
Chris McCarty - Caulfield Grammar School, VIC
Caulfield Grammar School introduced a 1:1 iPad program in 2014 for Years 7-10 and our faculty set out to use them in every Mathematics subject for genuine learning improvement. We wanted to avoid gimmicky apps that just added ‘bells and whistles’ for a particular lesson, and instead focus on usage that encouraged a deeper understanding or a greater exploration of serious mathematical concepts. Come and hear some of the specific ways in which we were pleasantly surprised by the iPad’s potential.

Notes: If you have an iPad feel free to bring it along, but this is not required.
Repeated as C37
G34  From Symmetry to Pythagoras: Teaching Geometric Proofs in AusVELS  
Lecture  
Joel Smith - Maths Pathway, VIC  
Dr Rebecca Ryan - Maths Pathway, VIC  

Geometric proofs have been introduced in AusVELS but there aren’t adequate resources out there to support the teaching of this section of the curriculum. Two mathematicians will share the resources they have developed for practical classroom use.  
**Repeated as F32**

G35  Supporting Out-of-field Teachers of Mathematics  
Workshop  
Dr Colleen Vale - Deakin University, VIC  
Dr Brian Doig - Deakin University, VIC  

This workshop will operate as a roundtable discussion. We will start by presenting some information about the current situation with respect to the practice of appointing out-of-field teachers to teach mathematics in secondary schools and the policy settings and practices impacting on this situation and support for out-of-field teachers. We hope that the discussion will enable participants to share their experiences, either as out-of-field teachers or leaders or co-ordinators of mathematics charged with the responsibility of mentoring and supporting out-of-field teachers at your school. We will use outcomes of the discussion to push for appropriate support for these teachers.  
**Not repeated**

G36  Trisection of Angle with Origami  
Workshop  
Karim Noura - Bayside P-12 College, VIC  

Teachers will be able to share activities of doing mathematics by folding papers. We will use Origami to create geometrical shapes. We will also show how to trisect straight and right angles as well as any arbitrary angle by folding papers. By the end of this workshop we should be able to extract and put more light on the geometrical demonstration of such problems.  
**Repeated as A40**

G37  Transition Program Solutions  
Workshop  
Peter Fox - Texas Instruments, VIC  

Remember when the end of the school year meant fewer classes, an opportunity to write reports during the school day, plan for next year and maybe attend the MAV conference? Early commencement, step up or transition program, whatever the name and your view on such things, they are now common place. For many teachers this is a stressful and awkward period of time. Students may not have their new textbook, many have no clues on how to use their new calculator and you’re still busy marking exams and writing reports. If this sounds familiar, I may just have the solution for you, and it doesn’t involve sick leave. Participants in this session will be provided with some self directed student booklets (FREE) that will help solve at least some of these problems. The concept of the program and selected problems will be covered in the workshop.  
**Notes:** Many of the investigations incorporate the use of technology. TI-Nspire calculators will be provided, but participants are welcome to bring their own calculator or computer.  
**Not repeated**

G38  How Learning Mathematics in a Digital Environment Can Reduce Cognitive Load to Improve Student Outcomes  
Workshop  
Antje Leigh-Lancaster - Pearson, VIC  
Vanessa Rule - Pearson, VIC  

Commercial Presentation  

This session will highlight what the research tells us about effective learning of mathematics (and physics) online. It will focus on how the use of worked examples, when embedded effectively in a digital environment, can reduce student cognitive load, helping the development of schemas, when introducing new concepts. In addition it will discuss the positive effect of providing learners with timely hints and feedback, and what this looks like in an online environment. This session will be of interest to people developing and/or considering adopting digital resources for teaching and learning secondary mathematics.  
**Notes:** Bring own laptop fully charged, able to connect to wireless internet.  
**Repeated as D41**
G39  Passionless Moments - Problems for Rainy Friday Afternoon
Workshop  Years 8 to 12

Bruce Ruthven - Melbourne Grammar, VIC

This session will present a series of interesting and unusual problems that the presenter has used over a number of years for students in Year 8-12 that challenge the intuition of the students. Participants will work through the problems and gain an appreciation of a novel problem and solution plus get a hard copy of the problems to use the very next day! If you are sick and tired of politics and elections and want to learn something that can be used in the classroom then this is the session for you.

Repeated as D43

G40  Investigating Trinomials with Integer Roots
Workshop  Years 9 to 10

Ray Williams - St Mark's Anglican Community School, WA

This session uses the TI-Nspire’s ability to do algebra in a spreadsheet to investigate trinomials where the coefficient of x2 is unity. Using the CAS facility, a time consuming and difficult exercise is made easy and patterns can emerge to reveal possible solutions to the question “Is there a way of finding which of these trinomials can be factorised with integers?” The results are quite interesting and lead to further areas to investigate.

Repeated as A49

G41  The Curvature of Linear Functions
Workshop  Years 9 to 11

Shane Dempsey - Baimbridge College, VIC
Chelsea Carter - Baimbridge College, VIC

As a student at school did you ever use nails hammered into a board, along with string, to create patterns known as string art? We can replicate these patterns with appropriate use of linear functions. A multi-layered investigation using the TI-Nspire provides a nice challenge for students starting with straight line equations and intersection points. An extension incorporating transformations as well as conditional formatting gives broad scope to the task.

Notes: CAS calculators available for loan.

Repeated as H39

G42  Worthwhile CAS Calculator Use in This Year’s 2nd Methods Exam?
Workshop  Years 10 to 12

Kevin McMenamin - The Peninsula School, VIC

Savvy use of the CAS calculator in past Methods 2 examinations has shown it to be advantageous and worth the time and effort in getting to know its workings. Generally 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. The session is suitable for TI-Nspire and ClassPad users and the Casio ClassPad will be the featured CAS.

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

Repeated as B52

G43  Teaching the Principle of Mathematical Induction in the Specialist Classroom
Lecture  Years 11 to 12

Andrew Woolley - Rosny College, TAS

The Principle of Mathematical Induction (PMI) is a formal method of proof that has applications in many areas of Mathematics. In Tasmania PMI has been taught in the Maths Specialised Syllabus in the Sequences and Series Criterion for many years and is part of the proposed ACARA Specialist Unit 2 course. In this presentation I will be examining methods of teaching PMI in the classroom, building from the idea of Recursion of Sequences (as in the proposed Victorian Specialist Units 1 Syllabus) and giving examples of its use in proving results in Sequences, Geometry and Matrices.

Repeated as C54

G44  Using Notes and Programs in TI-Nspire for Fully Automated Solutions of Mathematical Methods CAS Exam 2 Questions
Lecture  Years 11 to 12

Mehmet Altundal - Sirius College, VIC

Notes and programs are two very powerful tools, which can be used in Mathematical Methods CAS Exam 2. After participants get a number of notes and programs at the beginning of the session presenter will show how to use these notes and programs efficiently. Then essentials of creating new notes and programs will be covered. Participants will leave this session with new skills and also some TI-Nspire notes & programs which are ready to be used by their students in VCE exams.

Notes: Please bring TI-Nspire CAS (CX/Clickpad/Touchpad) calculator.

Not repeated
SESSION H: 2:10pm-3:10pm Friday 5th December

HK1 Rock or Sand: What International Surveys Tell Us About Australians’ Mathematical Foundations
Keynote

- Dave Tout - Australian Council for Educational Research (ACER), VIC
- Professor Kaye Stacey – The University of Melbourne, VIC
- Ross Turner - Australian Council for Educational Research (ACER), VIC

This presentation will look at some of the key messages from the Australian results of the Program for International Student Assessment (PISA) and the Programme for the International Assessment of Adult Competences (PIAAC), both released towards the end of 2013. PISA assessed the mathematical literacy of 15 year olds around Australia, whilst PIAAC assessed the numeracy proficiency of adults aged 15-74 years. What do the two surveys assess and are they telling a similar story? How do Australia’s results compare internationally? How solid are Australia’s mathematical foundations? What are some of the research outcomes and implications for both policy and practice for schools and lifelong learning?

Kaye Stacey is Professor Emeritus at the University of Melbourne, having held the Foundation Chair of Mathematics Education there for twenty years. She is an author of many books and articles for researchers and mathematics teachers at all levels. Kaye was the Chair of the international Mathematics Expert Group for PISA 2012. Dave Tout is a Senior Research Fellow at the Australian Council for Educational Research (ACER). Dave was a member of the Numeracy Expert Group for the international Adult Literacy and Lifeskills survey and also for the follow up survey, PIAAC. Dave also took a major role in the maths item development for PISA 2012. Ross Turner is a Principal Research Fellow at ACER. Ross’s major role at ACER, since early 2000, has been in management and coordination activities for PISA. He managed the test development process across three different knowledge domains with test development teams in several countries; led the test development in mathematics; and contributed to other technical aspects of PISA.

H2 The Maths Online Interview Still Rocks!
Workshop

- Pam Hammond - ROPA Consultancy, VIC

Is the Mathematics Online Interview (Early Years Numeracy Interview) still relevant? Does it link to the Australian Curriculum: Mathematics? Do tasks connect to the Mathematics Continuum - an online resource on the DEECD website available to all (Department, Catholic, Independent schools)? Yes! Yes! Yes! This workshop will show how these links can assist planning and also explore effective activities to move students forward in their mathematical understanding.

Repeated as G4

H3 Implementing Problem-solving at Eagle Point Primary School: A Whole School Approach
Lecture

- Anna Duncan - Eagle Point Primary School, VIC
- Natalie Clarke - Eagle Point Primary School, VIC
- Dr Gaye Williams - Deakin University, VIC

Anna and Nat reflect on the change process as Eagle Point Primary School introduced a whole school approach to learning mathematics through inquiry/problem-solving. They focus on the questions they asked themselves along the way: Why change? What types of structures should we put in place to increase our chances of success? What conscious steps did we take that were useful? What strategies helped? What have we achieved so far and what do we see for the future? Gaye (as external mentor) reflects on those characteristics of the school and the staff that contributed to the successes achieved so far.

Repeated as D13
H4 Working with Number Strategies

Workshop
Years F to 6

Neda Grose - VIC

Are you teaching ‘what you know’ or teaching students ‘how to know’ in mathematics? This workshop focuses on teaching for an understanding of thinking strategies that are used to solve number problems F-6. The workshop highlights the developmental sequence of thinking strategies F-6. It will also explore the explicit modelling of these strategies across different processes. The emphasis is on the student being confident to independently select which strategy to know to use to solve a particular problem. It will also form the foundation for older students thinking when they are ‘devising their own strategies’.

Repeated as G7

H5 Engaging and Challenging Mathematically Gifted Students in the Multi-ability Classroom

Workshop
Years F to 6

Penny Willoughby - Thinking Outside The Box Professional Education Services, VIC

Many capable teachers would like to better-differentiate for mathematically gifted learners in the mainstream classroom but are unsure of how to do so without planning a completely separate lesson. The answer lies in teaching open-ended lessons that cater for all abilities, including gifted students. This workshop will focus on the gifted cohort and the ‘Essentials of Planning for Open-ended Numeracy Learning’ will be exemplified through a lesson plan. Participants will then have the opportunity to modify open-ended questions to make them more engaging and challenging for gifted students. Importantly, participants will come away with practical experience they can use in their numeracy planning back in the classroom.

Repeated as D9

H6 iPads as a Mathematics Learning Tool

Workshop
Years F to 8

Fiorella Soci - Caulfield Grammar, VIC
Natalie Erwin - Caulfield Grammar, VIC

This presentation focuses on the second year of our journey of incorporating iPads into the Mathematics Curriculum. We will share what we have done and what we have learnt along the way - the good and the not so good of using iPads in the classroom. Our presentation will highlight the use of the iPad as a learning tool; moving past the idea of just focusing on the apps, to students using the iPad as a tool for learning when presented with Mathematics investigations and student led inquires.

Notes: Bring your iPad along so that you can look at some of the apps. Not a requirement of the presentation.

Repeated as G8

H7 Money Rocks The World

Workshop
Years F to 10

Shane O’Connor - Victorian Curriculum Assessment Authority (VCAA), VIC

The MoneySmart Teaching Project is ‘rocking the numeracy world’ across Australia!! There is now a full sequence from F-10 of ‘ready to go…ready to rock’ units of work. The units cover all the required Mathematics skills, knowledge and understanding set out by AusVELS and the Australian Curriculum. Teachers, as well as students, must develop greater consumer and financial numeracy. It is critical! Current levels of financial numeracy are low amongst both young and older Australians. These units of work will help schools commence that important journey to becoming a nationally highlighted MoneySmart School. Rock Money - Don’t let it rock you!!

Repeated as G9

H8 Video Animations - A Fun Way to Teach and Learn Mathematics

Lecture
Years F to 12

Carmen Popescu-Rose - Mathematics for Excellence, VIC

This session is intended to present an approach to teaching and learning Mathematics through the use of video animations. From the point of view of the presenter, a video animation is an excellent visual tool to deliver a lesson in a fun and interesting way and to have students as active participants in their learning. This session is intended to provide an insight into “how to produce video animations for a Mathematics classroom” using the software VideoScribe. Some of the features of video animation that will be presented are: getting started; adding text and mathematical expressions; adding graphs (CAS graphs exported from Mathematica, TI-Nspire or ClassPad) and pictures; morphing and recording voiceover or music. For those with an artistic flair, drawing own images and then importing them into the video animation will be demonstrated. In other words, creativity and imagination brought into the teaching and learning of Mathematics.

Repeated as C13
H9  A History of Coercion: The Military Influence on Maths Education
Lecture  Years F to 12
Dr Jude Ocean - RMIT University, VIC
In this session I argue that ‘traditional’ mathematics education is military in style. I will discuss eight classroom/school practices 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. In this session, we will collectively discuss each of these eight practices and talk about what negative and positive effects they have in our own teaching.
Repeated as G10

H10  Catering for Mathematically Talented Middle School Students: The Peculiar Puzzles of Professor Fibbernacho
Workshop  Years 5 to 8
Anne Eastaugh - G.A.T.E.WAYS, VIC
Meg Pini - G.A.T.E.WAYS, VIC
Commercial Presentation
There are students in our classrooms who have unusually strong reasoning abilities in mathematics; they quickly master new concepts and skills that exceed those of their classmates as well as year-level expectations. How do we provide adequate challenges for these students so that we can meet their needs? This workshop will consider research-based options and provide an example of a resource that can be used to nurture mathematical talent in middle school students. You will be introduced to the "The Peculiar Puzzles of Professor Fibbernacho" - a resource developed from a number of G.A.T.E.WAYS (Gifted and Talented Education) programs.
Repeated as A18

H11  Kids & Cup Cakes & Poster Puzzles
Workshop  Years 2 to 10
Douglas Williams - Mathematics Centre, VIC
Based on Task 212, Monkeys & Bananas, this workshop changes the story shell to make it easy to use your Poly Plug or other simple material such as bottle caps to explore the challenge. It is presented as a Poster Problem to introduce, or refresh, this technique of absorbing learners in a problem by developing their ability to read and understand it. The task can be tackled with little content background, but it also has a deep iceberg which includes using a spreadsheet, finding patterns and creating algebra. We will explore all aspects and provide follow up information from Mathematics Centre about Poster Problems.
Not repeated

H12  Using Card Games to Promote Fluency in Basic Number Facts
Workshop  Years 3 to 8
Linda Baron - Education By Design, VIC
Be prepared to have some fun! Together we will explore the use of card games to consolidate and promote fluency, speed and interest in learning basic number facts, for children in the classroom. We will also discuss how teacher observations and classroom conversations can assist children to reflect on their learning.
Repeated as G13

H13  Draw Rotation Symmetry and Translations
Workshop  Years 4 to 7
Jim Cramb - EasyDraw Products Australia, VIC
Lucy Mammides - EasyDraw Products Australia, VIC
Commercial Presentation
The MathoGraph System uses 25 shapes to create pictures, borders and patterns. After a brief overview and demonstration you will draw Rotation Symmetry and Kaleidoscope Patterns using the tools, paper and pencil provided. You will also draw and explore Translations, Reflections and the Mirror Line. Discover NEW activities to suit all abilities in your classroom. The activities will stimulate creativity, focus and deep thinking and help develop technical drawing skills. Jim will also demonstrate software which simulates the hands-on tools and accelerates the design process. For more information go to www.mathograph.com.
Repeated as E17
H14  Geometry in Art and Design: Escher, the MATHOMAT and the Australian Curriculum  
Workshop  
Susie Groves - Deakin University, VIC  
This workshop will illustrate ways in which an analysis of geometry in art and design can be used to underpin a range of exciting lessons to address the Measurement and Geometry strand of the Australian Curriculum. Participants will be asked to undertake mini-investigations related to regular and homogeneous tessellations, using the MATHOMAT as a tool to aid their investigations. A particular focus will be the work of M. C. Escher.  
Not repeated

H15  Developing Strategies for Computational Consistency Across Years 4-12 with Wolfram Research  
Lecture  
Craig Bauling - Wolfram Research, Illinois, USA  
Through leading edge technology like Wolfram|Alpha, Wolfram|Alpha Pro and Mathematica, your STEM teaching across Years 4-12 can reach new levels of consistency and depth. This seminar gives an overview for using these tools in Year 4-12 classrooms and how they can be employed to develop a strategy for computational student engagement. Topics include using www.wolframalpha.com to help early learners see that Maths Rock, using www.wolframalpha.com/pro/ to empower students to take responsibility for their learning outcomes, and using Mathematica’s free-form English language to leverage students’ interests for deeper computational exploration. We’ll highlight the vast library of pre-built learning materials, and show how built-in real-world datasets free up teacher to focus on more important tasks. Examples from the ACARA standards will be used to guide the discussion. Participants will receive session materials for later reference.  
Repeated as D23

H16  More Down to Earth Mathematics  
Workshop  
Leigh Thompson - Bairnsdale Secondary College, VIC  
Jacqui Kerr - Curtin University, VIC  
This presentation is a follow up to last year’s successful “Down to Earth Mathematics”. It aims to provide a range of activities that can enthuse and excite students of all ages about mathematics. No pie-in-the-sky but a down to earth into the rocks of understanding maths matters like π and more. Maths Rocks but the road the learning, understanding and using maths need not be a rocky one.  
Notes: 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 D24

H17  MS Excel Skills for What Graph to Use When  
Computer Workshop  
Iqbal Hossain - The Grange P-12 College, VIC  
Rudy Birsa - Williamstown High School, VIC  
The analysis of data can be very much facilitated by the use of MS Excel. Of particular importance is the visual representation of data. If the data can be correctly graphed it is then possible to extract some meaningful information from it. MS Excel allows for a plethora of visual representations and during this session we will be exploring the best format for some of the data sets presented. Some examples are Picture graph, Staked Bar Chart, Dot Plot, Histogram and Line of best fit, scatter plot etc. This session is particularly useful for those who would like to extract the most out of the graphing capabilities of MS Excel.  
Notes: Participants should bring a USB stick (a laptop is optional).  
Repeated as D26

H18  Every Student Learning Something Different - Calm or Chaos?  
Lecture  
Jacqui Lee - Emerald Secondary College, VIC  
Dr Jonathan MacLellan - Emerald Secondary College, VIC  
Brad Gibbs - Emerald Secondary College, VIC  
We’re all used to ‘token differentiation’: giving easy, medium or hard versions of practice work to students. But this still requires that all students learn the same maths at the same time. This year, Emerald Secondary College has tried something bold: true differentiation. Different students working on completely different things every lesson for the whole year. So how do our lessons look now? Calm or chaos? Hear about our experiences, both positive and negative, and see what resources we used for both hands-on learning and computer-aided assessment.  
Repeated as B32
H19 Changing the Way You Teach - Our Experience of Differentiation Using Maths Pathway
Workshop
Jenny Sutton - Lavalla Catholic College Traralgon, VIC
Deborah Murrell - Lavalla Catholic College Traralgon, VIC
Using Maths Pathway, we have completely changed the way we teach. No course outline, no whiteboard lectures, no one-size-fits-all assessment. Instead, each student learns something different according to their needs, and almost every student is thriving. How did we manage the change? What is the role of the teacher now? What do the students think? Is it more or less work for the teacher? How do we report? Hear about our experiences both good and bad.
Notes: Bring your own laptop with Google Chrome installed to participate in this session.
Repeated as C29

H20 Triple Maths Learning for the Cost of a Textbook
Lecture
Justin Matthys - Maths Pathway, VIC
Richard Wilson - Maths Pathway, VIC
Commercial Presentation
What would you say if there was an easy way to triple maths results and save teachers time - and it cost no more than your current text book? Two Aussie teachers have made this a reality by doing three things. First, precisely identifying each student’s learning needs. Second, providing high-quality personalised instruction and assessment. And third, enabling any teacher to do this in their classroom with an easy-to-use, comprehensive online system. Dozens of innovative, ICT-equipped schools are already taking advantage of this new maths learning solution, and are achieving phenomenal results..
Repeated as A30

H21 Creating Formulas is More Important Than Using Them: Techniques to Teach “Reasoning”
Lecture
Michaela Epstein - Hume Central Secondary College, VIC
Andrew Worsnop - VIC
Every maths classroom should be teaching mathematical ‘Reasoning’. As well as being a required proficiency strand in the Australian Curriculum, Reasoning facilitates the development of a deeper conceptual, in addition to holistic, understanding of mathematics. Key to this is the support given to students in creating and exploring formulas rather than solely memorising such mathematical shortcuts. In this session Andrew and Michaela present concrete strategies for embedding Reasoning into your classes so that it isn’t just another item burdening an already crowded curriculum. Instead, Reasoning is a powerful way to increase students’ long-term recall and ability to handle non-routine problems.
Repeated as A29

H22 Informatics
Lecture
Adjunct Professor Mike Clapper - Australian Mathematics Trust, ACT
The Australian Curriculum has now embraced Digital Technologies as a strand in the Technologies Learning Area. Students in Years 5 and 6 are expected to be able to design, modify and follow simple algorithms represented diagrammatically and in English involving sequences of steps, branching, and iteration (repetition), whilst by Year 8, they should implement and modify programs with user interfaces involving branching, iteration and functions in a general-purpose programming language. This potentially will have a large impact not only on Technology in schools but also on the way mathematics needs to be taught. The Australian Informatics Competition is probably the most significant resource material available in this area which does not require programming skills and this session will introduce this resource to teachers in a practical way. Incorporating Informatics problems into the maths curriculum has the potential to identify problem-solvers and to stimulate logical thinking.
Repeated as B33

H23 Mathematics at Quantum Victoria
Lecture
David Smith - Quantum Victoria, VIC
Joel Willis - Quantum Victoria, VIC
Commercial Presentation
Quantum Victoria is an innovative centre bringing science and mathematics education to life for students, teachers and the wider community. Participants attending this session receive an overview of Quantum Victoria’s Year 5 to 10 mathematics programs, which include “A Viral Enigma”, “Kinecting Sports” and “Mathematics and Lego Robotics”.
Not repeated
H24  Mathemagical Marvels to Liven Up Lessons
Lecture  Years 5 to 12
Andrew Wrigley - Somerset College, QLD
An interactive and entertaining stroll through a variety of mathematical ideas to spark interest and discussion. Basic number operations, algebra, geometry and probability are covered and a calculator might be useful. Participants will be invited to share their own ‘tricks of the trade’.

Not repeated

H25  Mathematical Fibre Art Rocks
Lecture  Years 5 to 12
Dr Katherine Seaton - La Trobe University, VIC
The current resurgence in interest in knitting and crochet has gripped parts of the mathematical world and led to some beautiful and informative pieces of mathematical fibre art, often based on a few simple stitches and rules for combining them. I will talk about art, craft, biology, maths, geometry and especially (Pi). You will be encouraged to begin a piece of hyperbolic crochet if you wish. Possible ways to use art in students’ maths classes - or maths in their art classes - or maths in your school’s knitting club - will be explored.

Notes: Please bring some 8 ply acrylic yarn and a crochet hook size 3-3.5 (smaller than usual size to produce tight tension) if you wish. Only double crochet is needed.
Repeated as C30

H26  Developing Algebraic Thinking: Providing New Tools to Understand Mathematical Relationships
Workshop  Years 6 to 9
George Booker - QLD
This workshop will address problem solving as a basis for developing algebraic thinking with problem tasks and representations through the use of materials that allow insight into the underlying algebraic ideas and thus provide a bridge to the more formal algebra that will be developed later. As solutions are obtained and described, generalisations can be formed among related problems, and ways of thinking developed that focus on the relationships within problems, building on a search for patterns among the representations chosen for the problems and their solutions.
Repeated as D28

H27  A Tale of Two Activities
Workshop  Years 6 to 10
Christine Lenghaus - VIC
1. What can you do with two small ropes and only two moves (quarter turn and a do-si-do)? The Math Circle runs at Notre Dame University each year in the US. Last year I attended and this was my favourite - ropes, lots of knots and great maths (fractions).
2. From Dan Meyer’s Sydney presentation last year, my favourite is a bizarre virus simulation (tables of values and lots more).

Notes: Bring a USB for any handouts in digital format.
Repeated as B34

H28  Differentiation-making a Difference at Mansfield Secondary College
Workshop  Years 7 to 8
Anthea Wood - Mansfield Secondary College, VIC
Emma Griffith - Mansfield Secondary College, VIC
Bruce McInnes - Mansfield Secondary College, VIC
We recognised a need to change our teaching practice and over the past three years, have developed a differentiated curriculum for Year 7 & 8 students. We would like to share our ideas, resources, assessment materials and successes. During this session, we will present: Links to AUSVels; how to implement the program; recording results; teacher resources.
Repeated as C33
H29 Teaching Mathematics Through Geometry: An Integrated Approach Using MATHOMAT and SKETCHPAD Software
Workshop Years 7 to 10
John Lawton - Objective Learning Materials, VIC
Michael O’Connor - Australian Mathematical Sciences Institute, VIC
Geometry is a sometimes difficult, but always important, part of mathematics teaching. Students need to develop their geometric and spatial reasoning if they are going to become genuinely mathematical in their approach to problem solving. This workshop demonstrates some ways of teaching mathematics through geometry. Our approach deepens student understanding by replacing rote text book activities with a more interesting open ended approach. A new lesson series by Michael O’Connor and Henri Picciotto will be demonstrated in this session. These lessons make integrated use of commonly available materials such as the MATHOMAT template, the GEOMETERS SKETCHPAD software and pattern blocks.
Not repeated

H30 More Problem Solving Please!
Lecture Years 7 to 10
Kelly Sharp - Scotch College, VIC
A common request in my Year 7 classroom is “Can we do problem solving today? You promised once per week!” Throughout my recent studies for my Masters, it was apparent this was not the case in many classrooms, indeed the tendency was for students to avoid problem solving. This session will demonstrate how I deliver problem solving, through carefully selected problems, to engage the student’s curiosity, confidence and enjoyment. It is not an extension of facts and skills, more so it is tapping into the student’s natural sense of logic and developing their ability the skills from their mathematical toolbox.
Repeated as B38

H31 Creating AusVELS Aligned Assessments Using Socrative
Workshop Years 7 to 10
Kristie Green - Pakenham Secondary College, VIC
Chris Hyde - Pakenham Secondary College, VIC
If you are looking for a powerful and effective way to align your assessments with AusVELS while also providing immediate student performance feedback, look no further than Socrative. Socrative is an engaging and versatile piece of software that is freely available to use on any platform including all browsers, tablets and smartphones. In this workshop you will create an assessment task, using Socrative, aligning with AusVELS which can be given as a pre and post-test. The data from this assessment will then be effortlessly downloaded as an Excel spreadsheet and used to provide immediate feedback, identify student growth points and allow you to decide on areas to focus on for follow-up lessons. By letting Socrative do the mundane work, you save yourself time during both planning and reporting sessions. Participants will be provided with digital copies of Socrative assessments already created and the Excel spreadsheet to analyse the results.
Notes: Please bring your own laptop (fully charged) and a USB to collect resources.
Repeated as A39

H32 Rock Mathematics Pedagogy with Some Bubble and Squeak: An Eclectic Approach
Lecture Years 7 to 10
Rama Ramakrishnan - Elsie-Rajam Private School, WA
This is an eclectic presentation focussing on mathematical pedagogy. The presentation showcases Mathematics Teaching with Technology along with Lumeracy concept. The Australian Curriculum: Mathematics aims to ensure that students:
◊ Are confident, creative users and communicators of mathematics, able to investigate, represent and interpret situations in their personal and work lives.
◊ Develop an increasingly sophisticated understanding of mathematical concepts and fluency with processes.
◊ Recognise connections between the areas of mathematics and other disciplines and appreciate mathematics as an accessible and enjoyable discipline to study.
To achieve this, an eclectic approach in the teaching of mathematics is essential. This presentation provides some examples for a task which is not as easy as it may sound!
Notes: TI-Nspire machines will be provided.
Repeated as D33
H33 Teacher Questioning in Mathematics Classes in China and Australia
Lecture Years 7 to 12
Lianchun Dong - Monash University, VIC

Asking questions is an important instructional activity frequently employed by teachers in mathematics classrooms worldwide. This presentation will compare teachers' questioning behaviour in Australian and Chinese classrooms by examining mathematics lessons taught by four experienced junior secondary teachers. Its cross-cultural approach allows researchers and practitioners to examine teaching practices within a much broader context, and thus contributes to a deeper and more explicit understanding of teaching behaviour in the two countries. It employs new ways of analysing and coding teacher questions and prompts in cross-cultural settings. These will be summarised and discussed in this presentation.

Repeated as C40

H34 Creative Pedagogy
Workshop Years 7 to 12
Janelle O'Neill - Mt St Michael’s College, QLD

Creativity refers to the act of producing new ideas, approaches or actions. Successful business Google identified 20% of employee’s work should be creative. This can be translated to teacher’s preparation time. Creativity requires a good knowledge of your subject and the individual learning needs of your students as well as a desire to strengthen the link between curriculum and assessment. What does creativity in the Maths Classroom look like? How do we promote intrinsic motivation and problem solving to foster creativity in students? Identify what sparks your creativity and hear about how to bring creativity to the Maths classroom!

Repeated as D40

H35 Mathematica Start Up at 10 and Before
Computer Workshop Years 8 to 11
Lauren Wood - Wodonga Senior Secondary College, VIC
Dr David Leigh-Lancaster - Victorian Curriculum Assessment Authority (VCAA), VIC
Rohan Barry - Wodonga Senior Secondary, VIC

Wodonga Senior Secondary College is one of five new schools involved in the VCAA expanded implementation of computer-based examination starting with Year 10 in 2014. This workshop will focus on AusVELS Mathematics Level 10 implementation with a focus on teaching and learning activities and related assessment using Mathematica digital documents called notebooks. There will also be some brief consideration of what could be done at earlier levels. We will use sample notebooks from the course, and participants are welcome to copy these materials. Previous familiarity with Mathematica is not required however participants should be familiar with working with software in a Windows environment.

Notes: Please bring along a USB to copy any files that are of interest.
Repeated as B49

H36 Exploring Geometric Regions Using TI-Nspire and Geogebra Technology
Workshop Years 8 to 12
Roger Wander - Melbourne Graduate School of Education, VIC

In this workshop, regions within the equilateral triangle and the circle will be examined. In one, the properties of an internal hexagon will be explored. In the other, the areas of the two circular segments formed by an inscribed triangle will be used to form new functions. In both cases, the groundwork for open-ended student investigations will have been constructed. It is suggested that participants bring a fully-charged laptop or iPad, etc with latest versions of the software for both technologies; but there will be benefit gained by scribing notes on the worksheet provided if that is not possible. Nspire CAS handhelds will be somewhat useful for the activities though the diagrams are very detailed. The Technology files used will be made available.

Notes: Bring your laptop and NSpire calculator.
Repeated as E34

H37 Enriching the Mathematics Classroom: A Visit to the Virtual Island
Lecture Years 9 to 10
Minh Huynh - RMIT University, VIC
Dr James Baglin - RMIT University, VIC

Enriching the classroom experience and changing the way students perceive mathematics is a crucial step for promoting Australia’s future into mathematical and statistical pathways. This presentation details the results of a 12 month project which utilised an innovative online virtual world, known as the Island, to engage and educate year 9 and 10 secondary school students in the statistics components of the Australian mathematics curriculum. The project provided educators with an innovative teaching resource that was delivered to a classroom of students, designed to improve their understanding of scientific research and promote further development of their statistical skills.

Not repeated
H38 Using a CAS Calculator to Teach Equation Solving
Workshop
Natalie Caruso - Loreto Mandeville Hall, VIC
Heather Balkin - Loreto Mandeville Hall, VIC
Whilst a CAS calculator can be used to find solutions of linear equations and simultaneous linear equations directly it can also be used to explore equation solving and particularly the process involved for solving simultaneous equations. In this session the presenters will demonstrate techniques for using a CAS calculator as a scaffolding tool for teaching equation solving.
Notes: Please bring either a Casio ClassPad or TI-Nspire CAS calculator to this session.
Repeated as D44

H39 The Curvature of Linear Functions
Workshop
Shane Dempsey - Baimbridge College, VIC
Chelsea Carter - Baimbridge College, VIC
As a student at school did you ever use nails hammered into a board, along with string, to create patterns known as string art? We can replicate these patterns with appropriate use of linear functions. A multi-layered investigation using the TI-Nspire provides a nice challenge for students starting with straight line equations and intersection points. An extension incorporating transformations as well as conditional formatting gives broad scope to the task.
Notes: CAS calculators available for loan.
Repeated as G41

H40 Pizza and Probability
Workshop
Damian Howison - St Mary MacKillop College, VIC
Pizza is not just for fractions. It is for probability too. Some concepts that learners often struggle to understand include conditional probability, mutually exclusive events, independent events, the addition theorem etc. Pizza with pepperoni and mushrooms is the basis of an appetising model used to help learners come to terms with these concepts. The lesson modelled in this workshop is very much in the style of some of the lesson genres developed and used by Prof Malcolm Swan, so learners have the opportunity to construct their understanding while the teacher can home in on the misconceptions and difficulties.
Not repeated

H41 Using PowerPoint in a Senior Maths Class
Computer Workshop
Dana Frantz - Ballarat High School, VIC
Giovanni Liubicich - Ballarat High School, VIC
Do you use PowerPoint as one of your learning and teaching resources in your mathematics class? Have you thought about using PowerPoint, or never considered the possibility? In this session we will demonstrate different ways we use PowerPoint to help teach mathematics to senior students. We will show you how to use animations to liven a PowerPoint presentation add a sense of movement, trace angles, draw lines and curves etc. You will also have the opportunity to consider both the advantages and disadvantages of using PowerPoint presentations in a maths class. Between us we have used PowerPoint presentations with a variety of Year 10, 11, and 12 classes.
Repeated as D50

H42 Popcorn Making in Maths Methods
Lecture
Andrew Woolley - Rosny College, TAS
Paul Barron - Rosny College, TAS
A practical demonstration of a calculus investigation involving popcorn making. We will be making popcorn, performing algebraic modelling, analysing rates of change and discussing further extensions to the task. This is a rich and detailed activity that you can use in both Year 11 and 12 Methods. And, yes you will get to eat popcorn.
Notes: A CAS calculator will be useful.
Not repeated
I teach first year students in Engineering and Science courses. They are delighted to see where, and how, their maths from High School is developed and used. For example, Electrical and Mechanical Engineering use similar differential equations to describe vibrations and oscillations, and complex numbers are used to analyse these, along with calculus of course. Integration is used for finding many quantities, not just areas and volumes. Working with chemical reaction rates requires partial fractions. This talk will have lots of applied mathematics in it and help you answer those “When am I ever going to need this?” questions.

Repeated as A57
Presenter Listing

Johny Alagappan – E3
Gilda Alavuk – B50
Carlie Alexander – D55
Mehmet Altundal – C-D5, G44
Duane Anderson – B44
Associate Professor Judy Anderson – A31
Rodney Anderson – B46, E33
Scott Anderson – C50, E40
Steve Andrew – CK2
Angela Andrews – C10, D16
Mohd Ariff Jasmi – B12, C14, E22
Freda Armstrong – A46, C42
Dr Stephen Arnold – A47, B47, C-D6
Peggy Ashton – A7, B5
Bernadette Atkins – D10
Daniel Avano – A26, B29, F20, G18
Gem Bagdadi – A6, E7
Dr James Baglin – H37
Ro Bairstow – C32, D30
Helen Baldock – E4, F4
Heather Balkin – D44, H38
John Bament – B46, E33
Louisa Barnsley – GK1
Professor Michael Barnsley – GK1
Linda Baron – G13, H12
Paul Barron – H42
Rohan Barry – B49, H35
Sarah Batch – F19
Craig Bauling – D23, F-G4, H15
Linda Beadle – E11
Anne Bennison – F19
Dr Steven Bird – EK1
Rudy Birsa – D26, H17
Craig Blake – D49, E26
Lee Blake – D7
Tracey Blunden – C39
George Booker – D28, H26
Christine Borcek – D8
Samantha Bothe – A22, E18
Chris Botheras – D3, F6
Kaye Bourke – E4, F4
Jennifer Bowden – B6, C5, E2, F2
Dr Leicha Bragg – B9, E9
Jenny Briggs – B6, C5
Adam Bright – E6
Caroline Brown – E27, G28
Dr Paul Brown – A42, E32
Russell Brown – C57, D53, E37, F38
Ian Bull – C28, D25
Sue Bullick – B24, G16
Andrew Burden – D34, E30
Latham Burns – DK1
Greg Butler - C4, D5
Cressida Byrne – C52, D55
Tim Byrne – B30
Tim Carruthers – F46
Chelsea Carter – G41, H39
Natalie Caruso – D44, H38
Jan Cavanagh – E8, F15
Yew Fook Chan – A53
Colin Chapman – A41, B43
Michael Chapman – D42, F34
Dr Jill Cheeseman – D2
Linda Cheeseman – A14, B14
Anita Chin – C9, D15
Adjunct Professor Mike Clapper – A28, B33, C-D3, G21, H22
Natalie Clarke – D13, H3
Sandra Clarke-Jones – E26
Professor Philip Clarkson – D10
Rachael Cobham – E13, G12
Bree Collins – E2, F2
Peter Collins – D38
Victoria Cook – F12
Karissa Cooke – F19
Ellen Corovic – B6, C5, E28, F26
Dr Mary Coupland – A57, H43
Lauren Crack – B6, C5
Jim Cramb – E17, H13
Ray Cross – A48, F35
Shelley Cross – A37, E29
Leanne Cummings – C4, D5
Evan Curnow – A35
Jenny Curtis – B48, C43
Soraya Davids – B25
Aylie Davidson – C20, F17
Cathy Davidson – G3
Lorraine Day – B40, C31
Kaelynne D’cruz – B6
David Demant – A25, B27
Shane Dempsey – G41, H39
Bryce Dermody – F27
Cathy Devlyn – B42
Michael de Zilva – A26, B29, F20, G18
Marissa DiPasquale – C36, D35
Jenny Dockeary – G3
Dr Brian Doig – E6, G35
Lianchun Dong – C40, H33
Anna Duncan – D13, H3
Hayley Dureau – C57, D53, E37, F38
Anne Eastaugh – A18, H10
Donald Eddington – A6, E7
Ken Ellis – A33, D29
Catherine Epstein – E5, F5
Michaela Epstein – A29, H21
Heather Ernst – F30
Natalie Erwin – G8, H6
Dr Michael Evans – AK2
Shane Eward – B11, C11
Amanda Ferguson – A19, B19
John Fitzherbert – C38, E31
Darren Fitzpatrick – A44
Pamela Foong – C22, D22
Professor Helen Forgasz – F19
Kara Fox – B44
Peter Fox – A-B6, D39, G37
Dana Frantz – D50, H41
Siqiang Fu – C22, D22
Raewyn Gainsford – E13, G12
Beth Galea – E4, F4
Pearlyn Gan – C22, D22
Kelly Gallivan – A13
Associate Professor Vince Geiger – F19
Amy George – F19
Brad Gibbs – B32, H18
Adam Gilbert – B11, C11
Ruth Ginter – B50
Rose Golds – C16, D18
Tim Grabovszky – C49, D46
Bozena Graham – B53, C51
Christine Graham – A3, B2
Kristie Green – A39, H31
Emma Griffith – C33, H28
Shirly Griffith – A35
Neda Grose – G7, H4
Susie Groves – B31, E6, H14
Monika Gruss – A-B1
Karleigh Hammond – A37, E29
Pam Hammond – G4, H2
Helen Haralambous – E28, F26
Nicola Harle – C36, D35
Anthony Harradine – B18, E36, F-G7
Ashlie Hassell – B6
Dr Sandra Herbert – B9, E9
Laura Higginbottom – D34, E30
Marie Hirst – C16, D18
Brian Hodgson – G30
Robyn Holt – A21, B21
Derek Holton – A-B2, F-G3
Jan Honnens – E24, G22
Samantha Horrocks – B41, C44, D36
Associate Professor Marj Horne – D37, F3, G2
Iqbal Hossain – D26, H17
Alison Howard – A17, B16
Damian Howson – A-B4, E39, F36, H40
Bryn Humberstone – C37, G33
Dr Derek Hurrell – A16, C31
Minh Huynh – H37
Thao Huynh – F21, G20
Chris Hyde – A39, H31
Justine Johnston – A-B4, D36
Hayley Johnston-Coutts – D7
Professor Peter Jones – C56, F45
Chris Kellett – B4, D4
Rose Kelly – E2, F2
John Kermond – A54, B56
Jacqui Kerr – D24, H16
Luke Kerr – A-B6
Helen King – D31, F24
Gillian Kissling – A15, C18
Dr Tim Kitchen – B26, C25
Richard Korbosky – A45, B17, C3, E12, F13
Adam Kruger – B37, G25
Michelle Kueh – D17, E10
Tiowchoo Kwee – C46, F37
Dean Lamson – A56, B58
John Lawton – A45, H29
Chris Leal – F19
Jacqui Lee – B32, H18
Antje Leigh-Lancaster – D41, F46, G38
Courtney Lee – C5
Dr David Leigh-Lancaster – A2, B49, H35
Christine Lenghaus – B34, H27
Stephen Lewis – A8
Fiona Lindsay – C4, D5

Giovanni Liubicich – D50, H41
Dr Sharyn Livy – C7, D11
Mark Ljubic – B25
Bern Long – A5, B3
Dr Esther Loong – B9, E9
Michelle Lopaticki – B6, C5
Dr Ian Lowe – A50, C47, D48, E45, F8, G24
Rhiannon Lowry – D14, F10
Cassandra Lowry – C8, D12
Alastair Lupton – D32, G26
Donna Mackinnon – F-G6
Dr Jonathan MacLellan – B32, H19
Jessica Macrae – A36, B36
Peter Maher – F7, G5
Susan Maher – F7, G5
Lucy Mammides – E17, H13
Lauren Marriott – C6, D6
Karen Martin – F27
Justin Mathys – A30, H20
Heather McCarthy – B42
Sheila McCarthy – B11, C11
Chris McCarty – C37, G33
Yingru Maughhey – F39
Dr Andrea McDonough – D2
Marguerite McGrath – C8, D12
Bruce McNees – C33, H28
Ainslie McIntosh – A4
Janine McIntosh – A12
Brian McKinley – D47
Dr Heather McMaster – C-D2
Kevan McMenamin – A52, B52, D51, E41, F42, G42
Allison McNamara – A56, B58, C53
Peter Mein – C39
Sanjeev Meston – A-B7
Anne Milburn – A3, B2
Jaynay Miller – A11, B10
Louise Miller – A15, C18
Rohani Mohamad – G29
Colleen Monaghan – B13, C15
Robert Money – A50, B41, C47, D36
Frank Moya – C48, D45
Mark Mudge – A20, E15
Dr Tracey Muir – C7, D11
Deborah Murrell – C29, H19
Kerry Nagle – B57
Graeme Newman – C55, D52
Dr Wee Leng Ng – C41
Thanh Nguyen – E42, F43
Stephanie Nitschke – F14
Paul Noonan – F14
Karim Noura – A40, G36
Anthony Nunan – D27, G23
Dr Jude Ocean – G10, H9
Michael O’Connor – A12, G11, H29
Shane O’Connor – G9, H7
Janelle O’Neill – D40, H34
Michael O’Reilly – A-B5, E20
Georgia Papadopoulos – E27, G28
Jennifer Palis – EK1
Kathryn Palmer – A10, E6
Mary Papp – C53
Robert Park – A34, E25