SHORT CIRCUIT

Business Name

VOLUME 16 NUMBER 11 NOVEMBER 2025

NEWS AND COMMENT

AGM 2025

Members and prospective members of the Canberra Mathematical Association are invited to attend the Annual General Meeting to be held on **Thursday 13th November, 2025**.

The venue is NOT the Erindale College restaurant, as was previously announced, but instead has been changed to the **Southern Cross Club, Jamison**, at 5:30 p.m. for a 6:00 p.m. start,

Attendees will need to order their own meals, which will be interrupted for reports, elections and other minor business.

We need to know who will be coming. To RSVP, please use the CMA email or go to the website.

Coming up at very short notice is a **workshop** that should interest upper primary and early secondary teachers.

See page 6 for information about this opportunity for professional development.

Year 12 maths medals

CMA is once again offering to any school or college that wants one, a medal to be awarded to the top Maths student in Year 12.

Medals can be collected from Peter McIntyre in Kambah (0403 509 952) or Valerie Barker in Aranda (0410 151 554).

The school is responsible for any engraving.

In this edition you will find contributions from local mathematics teachers all of whom are engaged, in their various ways, in the task of bringing out the best learning responses from their students.

Particularly apposite is the final paragraph in Bruce Ferrington's piece, which contrasts procedural learning (important though it is) with a kind of mathematical thinking that 'helps us make sense of the world'. This cannot be taught by recipe but calls for imagination and invention.

CANBERRA MATHEMATICAL ASSOCIATION

NEWSLETTER

The CMA newsletter, Short Circuit, is distributed monthly to everyone on our mailing list, free of charge and regardless of membership status.

That you are receiving Short Circuit does not imply that you are a current CMA member but we do encourage you to join.

Short Circuit welcomes all readers.

CMA MEMBERSHIP

Memberships run from 1 Jan to 31 Dec. each year. Membership forms may be downloaded from the CMA website: http://www.canberramaths.org.au

The benefits of Membership of CMA may be found on the website.

Inside:

CONFERENCE 2026

Save the date: the 2026 CMA Annual Conference will be held at ADFA on Saturday 28th March. The theme is *Mathematics: Are You Game?*

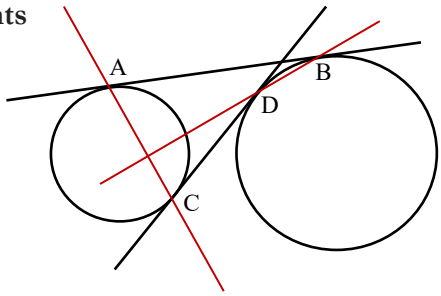
The conference will feature outstanding keynote speakers; up to 35 sessions of workshops and presentations catering for all sectors; a range of trade stalls; quality catering; and networking opportunities for all attendees.

A 2026 membership will entitle you to members' registration rates, for individuals or for your faculty.

We welcome contributions to the conference; if you or a colleague have some favourite teaching ideas and experiences or some research to share, then our conference is an ideal opportunity for you. Please contact Valerie Barker with your ideas and suggestions via canberramaths@gmail.com.

PUZZLE SOLUTION from Vol 16 No 10

Tangents



Tangents AB and CD are drawn between two non-intersecting circles. Lines AC and BD pass through the points of tangency A, C and B, D respectively.

The lines AC and BD appear to be at right-angles in the diagram. Argue logically that this must always be the case whatever the sizes of the circles.

Tangents to a circle from a point outside the circle have equal length. Therefore, the point of intersection of the two tangents AB and CD is the common vertex of two isosceles triangles involving the chords AC and BD. We can deduce from this that angles A and B are related by $2A+2B=180°$. Then, $A+B=90°$ and so, the triangle formed by lines AB, AC and the chord BD (extended) is right-angled whatever the relative sizes of the circles.

TUTOR TURMOIL

John Carty, formerly an employee of the Board of Senior Secondary Studies, has responded to our mention in the October edition about requests for tutoring. He has supplied some personal observations and an article copied from the Sydney Morning Herald that raises alarms.

John notes with irony that by the time he was a second year university student he was in demand as a private tutor for well-off students from the leafier suburbs while he himself had struggled out of an unsupportive Western Sydney base.

After working in industry for a time as a statistician, the positive memories of tutoring drew him to a career change as a secondary teacher.

He found eventually that he could enlist his former students from his school (Merici) who had gone on to university, to be tutors when there were requests from parents. This worked well enough at the time but John remarks that the mix of students' backgrounds is now very different from when he was a teacher and that strategy may no longer work.

On the crisis of tutoring, John has supplied an article by SMH Education Editor Lucy Carroll, which, since it is hidden behind a firewall, we summarise as follows.

There is [in Sydney] a lucrative private tutoring industry that lacks oversight and regulation and that threatens to undermine classroom teaching by making school lessons seem less relevant than the coaching sessions.

Coaching centres across Sydney are running hundreds of classes each week in core HSC subjects, with staff not necessarily qualified and certified in the way school teachers are required to be.

One driver of the demand is students' desire to be eligible for 'opportunity classes' and other extension work offered by some schools.

With costs to students up to tens of thousands of dollars, coaching centres are exacerbating inequities in the education system.

THE WRONG QUESTION

From Bruce Ferrington.

If we've all got the same answer, we must be asking the wrong question

When I went to school we had maths textbooks. They had pages and pages of questions – maybe your school had them too. Each day the teacher would set us to work on exercises that would drill us in the knowledge of mathematical calculations, inducing the same agony as the dentist who would drill our cavities. But the best thing about the maths textbook was the fact that the answers were always printed in the back of the book. We all knew that each question had a right answer, a correct solution, and we could find it by surreptitiously flipping to the back section and unobtrusively scanning through till we found the one we wanted. Just to check that we had got it right, of course.

Imagine the confusion and disillusionment of entire generations brought up to search for the answers in the back of the book, only to find that the questions asked by life aren't going to be found under Chapter 15 Exercise 3 Question d). The big questions in life like "Who are you?", "What about me?", "Do you really want to hurt me?" or "Why? Why? Why Delilah?" can be expounded philosophically through the titles of popular songs but their answers will never be found in the back of the maths textbook or indeed in the fine print on the album sleeve or CD liner notes.

And so when we ask the class to solve the equation $y = 3x + 12$ and that noisy student asks the provocative question, "When will I ever need to know this in real life?" are any of us honest enough to answer – "Never – that question will never come up again and its solution will not bring the world any closer to peace and harmony."

If we've all got the same answer we must be asking the wrong question.

Why can we accept ambiguity and multiple potential interpretations in social sciences, politics and history but remain so dogmatic and demand a single universal solution in mathematics? What has happened to mathematics education where the ideal has become to do more and do it more quickly, using the method I just showed you on the white board – just copy this down and substitute the new numbers in there and there – rather than in looking for new ways, different ways, unconventional ways, dare I say it – creative ways? Where has the creativity gone in mathematics education? – not simply in the presentation of the content using creative media to entertain the class but in encouraging and expecting creativity in the solution.

If education is a process of liberation, why have teachers become fixated on finding the "right" answer? Are our students the passive victims of mathematics education rather than being empowered by it to discover new and creative interpretations of their world? Are we as teachers encouraging convergent thinking in mathematics and do we shy away from anything resembling divergence?

If we want to see students respond in creative and individual ways in our classrooms, we need to ask them the right questions. We need to be asking questions that provoke, questions that challenge assumptions, questions that take them from the known to the unknown, questions that are ambiguous and difficult. We need to prepare students for a world where mathematics can be used to sort out the confusion and chaos, to clarify the uncertain and to describe the unfamiliar. We need to prepare students for a world where mathematics certainly does not "stand alone" but is involved in the decisions we make each day.

Yes – we can learn specific number skills – this is called arithmetic. When we start to use this knowledge to help us make sense of the world around us – this is Mathematics.

NOTATION FOR SENSE

From Tad Kuzma.

Integers

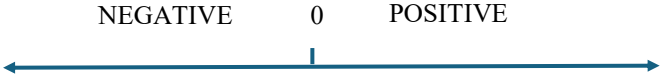
When I was first introduced to Directed Numbers we used a very clear notation. The number had a sign attached. It was superscripted at the front, e.g. $^{+}3$ meant positive three, $^{-}3$ meant negative three. This notation seems to have become ignored and this, I believe, is costing us effective teaching and greater understanding for our students.

The change to the –3 being used for $^{-}3$ must cause confusion. The former is not a number but an operation. The latter is a number which needs an operation to tell us what to do with it. Calculators have compounded the issues with poor programming. You can pick up a junior school scientific calculator, type in 3 – – 4 and it will give you 7. Try that with Senior school graphics calculator and you will get a syntax error. Have our rules changed when we reach senior school?

The language that we use to describe our operations also has to change. I am sure we have all heard or said "two negatives make a positive". What a load of rubbish. I crash my car—one negative; my wife crashes hers—two negatives. Do you believe that's a positive? Looking back at 3 – – 4. Three take away, take away 4. Does that make any sense? And before you argue that it should be read as three take away negative four, No it shouldn't. There are two mathematical operations attached with no sign of the number. Ask yourself how often do we speak like that. "I want you to eat, eat your dinner.": "Wash, wash the car." It makes no sense but we teach that way.

Let's get back to the basic language. Positive is Good, Negative is bad.

Draw up an emotional state line.



Have the students mark how they are feeling.

Start a discussion on the effects positive and negative events have on our well-being and attitude.

How will your state change if we add a negative event?

What if we take away a positive factor?

What if we get rid of a negative factor?

As you give examples of these factors of events, students accept that adding a negative or getting rid of a positive will bring you down. However, getting rid of a negative will be a good thing. You will feel better.

Now express your calculations using that language and symbols.

The first number is where you are at present on the scale. The next symbol is an operation – adding or taking away. The third is the signed factor or event.

e.g., $4 + {}^{-}3$

I am at 4 on my emotional scale. A negative event happens.

That will move me down the scale. Start at 4 move down 3.

Or this: $^{-}2 - {}^{-}5$

I am at 2 below zero, feeling a little negative.

I take away or get rid of something. Turns out I get rid of a negative thing. My life just got better.

Start at 2 below and move up 5.

Kids understand feelings. If we can display the positivity or negativity of numbers correctly, we can use their understanding to teach the arithmetic of integers. Take away, take away makes no sense. Getting rid of a negative does.

Bring back the correct notation.

NEWSLETTER OF THE BUSINESS NAME INC

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We're on the Web!
http://www.canberramaths.org.au/

ABOUT THE CMA

The Canberra Mathematical Association (Inc.) is the representative body of professional educators of mathematics in Canberra, Australia.
It was established by, among others, the late Professor Bernhard Neumann in 1963. It continues to run - as it began - purely on a volunteer basis.

Its aims include

* the promotion of mathematical education to government through lobbying,
* the development, application and dissemination of mathematical knowledge within Canberra through in-service opportunities, and
* facilitating effective cooperation and collaboration between mathematics teachers and their colleagues in Canberra.

THE 2025 CMA COMMITTEE

President	Bruce Ferrington	Radford College
Vice President	Aruna Williams	Erindale College
Secretary	Valerie Barker	
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	Jo McKenzie	ACT Education Directorate
	Bernadette Matthew	Mother Teresa School

Theresa Shellshear is CMA's COACTEA representative.

Bruce Ferrington is CMA's AAMT representative.

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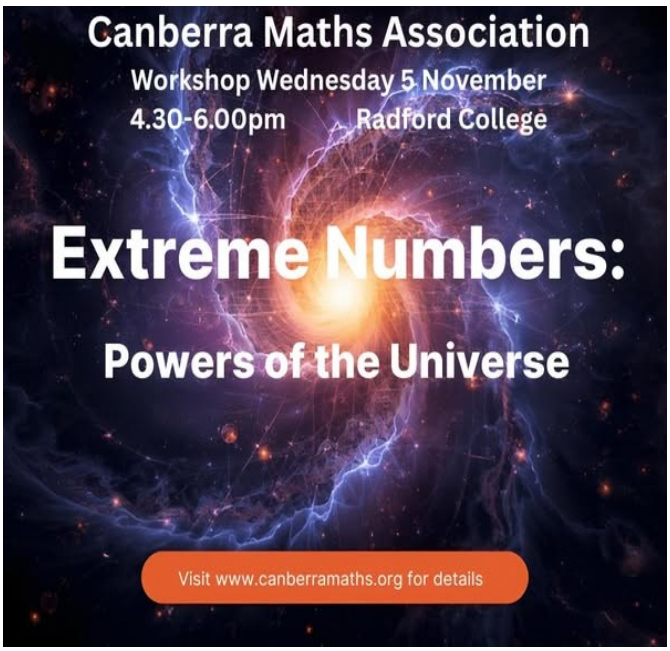
http://www.facebook.com/pages/Canberra-Mathematical-Association/110629419011275

WORKSHOP



This workshop equips teachers with a toolkit of engaging activities to demystify vast mathematical scales for their students.

Through interactive games, simulations, and creative projects, you will learn practical methods to help students develop comparison and estimation skills for extreme numbers, making multiplication and division with them simple and manageable.

These dynamic classroom strategies move beyond traditional worksheets to make abstract concepts like exponential growth tangible and exciting. You will leave empowered to foster a newfound ability in your students to comprehend the immense scale of the universe and make abstract math concepts relevant to the modern world.

Wednesday 5 November. 4:30-6:00 p.m. Radford College. To register your interest to attend, email canberramaths@gmail.com.

The workshop is free for members and costs $20 for non-members.

ATSIMA - BRUNY ISLAND

ATSIMA Conference 2025: **Our Language Our Strength**, Bruny Island, TAS

From Yuka Saponaro

[Yuka attended the biennial Conference of the Aboriginal and Torres Strait Islander Mathematics Alliance as a CMA representative in line with our commitment towards improving outcomes for students with aboriginal and Torres Strait heritage.]

In early October, I had the privilege of attending the ATSIMA Conference on Bruny Island in TAS (Lutruwita) and learning from Palawa elder Uncle Rodney Dillon, Dewayne Everettsmith, Linton Burgess and June Sculthorpe about the resilience and strengths of the Palawa people (Tasmanian Aboriginal people) in reviving their language, *palawa kani* and the continuation of their rich culture and traditions.

Dewayne Everettsmith (Left) and Palawa Elder Uncle Rodney Dillon (Right), Photo by ATSIMA

The ATSIMA conference community also learned about Uncle Rodney's ancestor, Fanny Cochrane Smith who is believed to be the last fluent speaker of palawa kani and about the cultural significance of her 1899 song and language recordings on wax cylinders for the Palawa people and their language.

Fanny Cochrane Smith wearing a belt with wallaby (?) pelts (State Library of Tasmania)

Over 3 days, Uncle Rodney guided us on our truth-telling journey through oral storytelling around the island including the history of Murrayfield Station, a sheep station now managed by Weetapoona Aboriginal Corporation where the conference was held.

On Day 1, he welcomed us to Palawa Country and later shared with us a dreamtime story about a mother whale and its calf by the beach explaining its connections to Country.

On Day 2, Uncle Rodney went diving in the icy waters for abalones so we could experience Palawa food culture and traditions which have been practised for 40,000 years.

Lastly, we also learned about the importance of mutton birds in Palawa culture and got to experience their unique lamb-like flavours.

Cooking mutton birds, Photo by Yuka Saponaro

We are very grateful to Uncle Rodney and other Palawa leaders for their generosity in sharing their knowledge and stories with us.

Thank you again to ATSIMA for organising this incredibly special event and to CMA for their amazing support.

Storytelling by the beach (Courtesy of ATSIMA)

Bruny Island (Courtesy of ATSIMA)

MINISTERS MEET

The Australian Alliance of Associations in Education (AAAE) has alerted CMA to a recent meeting of education ministers.

The ministers met at Broadbeach State School in Queensland on 17 October 2025. A four page communiqué from the meeting can be read by clicking this link.

The communiqué gently compacts the significance of the meeting into acronym-space, the meeting itself becoming an EMM.

We read of the ECEC, Early Childhood Education and Care safety reforms—a response, we surmise, to recent events that have received media attention.

Further topics considered were a Preschool Reform Agreement, actions on bullying in schools, social media restrictions and AI threats, and a new Teaching and Learning Commission.

We imagine the latter will be known as the TLC despite these letters already belonging to an entirely different concept. It is proposed that the commission will coordinate the functions of ACARA, AITSL, AERO and ESA. It is to be developed by a consultative working group drawn from various acronyms.

Reading on, the ministers considered curriculum reform for F-2 mathematics, teacher workforce action, initial teacher education, and university governance.