2023 AMESA
Mathematics for Hope

PROGRAMME

28th Annual National Congress of the Association for Mathematics Education of South Africa (AMESA)

26 – 30 June 2023

University of Cape Town
Western Cape

Our sponsors

Other sponsors

Message from the AMESA President

I would like to take this opportunity to WELCOME you all to our 28th annual National Congress!!

In our endeavour to achieve one of AMESA's objectives, the National Council and its Local Organising Committee (LOC) organise and host this prime event on an annual basis in a different province of South Africa each year, and Western Cape is the host province of the 28th version of this prestigious event.

AMESA Congress 2023 happens at the time when we have a mixed bag of emotions:

- It happens at the time when we are celebrating 30 years of existence of AMESA as a professional association of those who have interest in mathematics (8 July 1993 was the day of the launch), but
- It also happens at the time when we mourn the passing away of the AMESA's first President, Dr Mathume Bopape. He passed away on 15 July 2022, this was soon after our 27th National Congress. May his soul rest in peace.

AMESA caters for a wide range of audiences including school-based classroom teachers, office-based mathematics curriculum advisors and education department officials who support teachers, University, NGO and project personnel involved in pre-service and in-service mathematics teacher education, researchers, student-teachers and vendors. Once again you are all welcome and thank you for taking your time to participate and/or contribute to the 28th encounter of AMESA Annual National Congress.

Let me start by welcoming the teachers/classroom practitioners both in the GET and FET bands for giving up your vacation time and take responsibility for your own professional development by attending AMESA Congress 2023. The Congress is filled with HOPE to find solutions for mathematics learning and teaching. Please hold on to this HOPE as you attend lectures, workshops and discussions which I sincerely know you will benefit from.

> *"HOPE is not passive. HOPE is taking action. And HOPE always comes from the people." Greta Thunberg*

I also want to particularly thank our presenters (academics and practitioners including plenary speakers, and panellists) for taking their time to prepare informative and valuable presentations that we will be experiencing throughout the week. Without them, there is no Congress for there would be no reason for HOPE.

To Connie Skelton (Congress Director) and team, without you, this Congress would only have been a dream, but you turned the dream into HOPE. Thank you for your commitment and dedication towards making this Congress a success.

Finally let me thank delegates, stakeholders and everyone participating in the 28th AMESA Annual National Congress. In view of the mixed emotions referred to in my opening, I HOPE that the delegates will use this opportunity to celebrate the sustained existence of AMESA as a professional association and honour the commitment that Dr. Mathume Bopape has shown to the mathematics education community. Please enjoy and make this a memorable event.

Manare Setati
AMESA President

Message from the 2023 Congress Director

As South Africans we can be proud to have “the Fairest Cape in all the world” as our magnificent host city for the AMESA Congress of 2023. The local organising committee welcomes you to our mountain and beaches and hopes that your stay is a memorable one.

We hope that all delegates will embrace our theme of the “Mathematics of Hope”, using this time of academic deliberation to reset their sails, stock up on teaching ideas to take to their classrooms, and head back home to make a difference in learners’ lives with a message of Hope in Mathematics.

We hope that the Cape’s winter weather will not be too stormy for our visitors! However, for many of the young people of South Africa, mathematics is indeed an area of their lives which holds deep, fearful and stormy waters, and many feel shipwrecked on its shores for reasons beyond their control. May we all become equipped over the next week to give those young people tools, understanding and hope to flourish within the beauty of a storm – may we teach them the ability to use the winds to gain even more ground.

May all travelling delegates find a home away from home in our city for this week. May you feel welcomed by a hospitable, friendly people. The social programme of Congress promises delegates a taste of the hospitality and beauty of the place – after long days of thinking and debating, may we all take time off to relax and enjoy each other’s company.

Thank you to the many people who have helped put together a Congress that promises to be special – to the members of the local and national organising committees, to sponsors and to the University of Cape Town, a sincere thanks. And to delegates for giving up time during holidays and to the many who travelled long distances – your dedication to the young people in your care is wonderful and you offer them the hope to which the Congress theme speaks.

Best wishes for a magnificent week of mathematics and hope.

Connie Skelton

Message from the AMESA Western Cape Chairperson

Welcome to the 28th Annual National Congress of the Association of Mathematics Education for South Africa. It has been quite a year planning for this event, and we are glad to welcome you to the Western Cape. We are also grateful to the University of Cape Town for hosting us this year. The congress theme "Mathematics for Hope: Building connections in Mathematics Teaching and Learning" was chosen considering the current climate within education and specifically Mathematics Education.

The inequalities in the South African education system continue to prevail. The Covid-19 pandemic highlighted these inequalities, and we know that there is still much to be done in order to create access to quality teaching and learning experiences for all. Trying to recover the lost time due to the national lockdown is proving to be a challenge and requires much effort from many role players within the education system. Furthermore, the shortage of electricity and frequency of loadshedding is yet another obstacle in trying to provide quality teaching and learning. We hope that the presentations and discussions around the theme "Mathematics for Hope" will encourage you to find ways in which to overcome the challenges you face in your working environments.

This year also marks the 30th anniversary of AMESA. In writing this message I reminded myself of the aims of AMESA, which in general is to promote Mathematics Education by enhancing the quality of teaching and learning. A specific aim towards achieving this goal is to encourage research related to Mathematics Education and bringing the results to the attention of its members. The annual national congress is an excellent opportunity for sharing current research and new approaches to teaching Mathematics. AMESA has a big role to play in our Mathematics education community and we are reminded of the role that many have played in AMESA over the past 30 years. It has been a privilege to be a part of AMESA Western Cape Council for the past few years and the LOC 2023. AMESA continues to provide a platform for professional development and personal growth within Mathematics Education. I would like to encourage others to become actively involved in their local councils and contribute towards the growth and advancement of AMESA for many more years to come.

Many individuals have worked tirelessly to make the AMESA Congress 2023 a reality. I would like to thank the Congress Director Connie Skelton for her leadership throughout the process of planning for this congress. Connie Skelton's dedication to the congress and commitment is much appreciated. I would like to thank the Academic Coordinator, Duncan Mhakure, for his coordination of the academic portfolio and for his dedication to the portfolio. I would like to thank every member of the LOC 2023 for their time and contributions. Thank you to the NOC 2023 for overseeing the planning and implementation of Congress 2023. Finally, I wish to extend my appreciation to all participants and presenters for your willingness to share your knowledge and expertise.

Wishing you an enjoyable AMESA Congress 2023 and we hope that the presentations, panel discussions and activities will add value to your teaching and practice. May the sharing of knowledge and good practice contribute to the advancement of Mathematics Education.

Kind regards,

Bronwyn Adonis-Maarman
Chairperson of AMESA Western Cape Council

Message from Interim Vice-Chancellor, UCT

Welcome to the AMESA Conference 2023 at the University of Cape Town

The difference that excellent teaching at primary and high school levels can make, in our students' approach to the challenges of tertiary education, is very evident here at UCT. The teachers who stand out in our students' memories include those who focus on building positive attitudes about exploring new ideas. They instil a lifelong passion for learning.

Because mathematics is critical to so many sectors and jobs, and given its perception as a gatekeeper for many career paths, the teaching of it needs the support of families, professional organisations, university faculties, policy makers and the learners themselves. The theme of this year's AMESA Conference is about building the kinds of connections that can instil confidence, hope, and joy in learning mathematics. I wish you well in your presentations and discussions as you explore approaches to your teaching, and changes in policy, which will contribute towards achieving the laudable goals of the conference theme.

Emeritus Professor Daya Reddy
Interim Vice-Chancellor

Message from the Superintendent-General (SG) WCED

A warm welcome to all AMESA National Congress participants to the Western Cape.

The Western Cape Education Department shares the aims of AMESA in promoting Mathematics Education in our schools. The importance of enhancing the quality of the teaching and learning of mathematics has never been more critical. The impact of the Covid-19 pandemic and the loss of teaching and learning time has had a devastating impact on our language and mathematics performance, both in this Province and Nationally. This has been confirmed by our Provincial systemic test results, as well as, the recent PIRLS results.

The current **Back on Track** intervention in the Western Cape focuses on reversing the declining trends in both Language and Mathematics and aims to put us Back on Track towards the positive trajectory we saw in performance, pre-2020. We are currently implementing a variety of province-wide initiatives and interventions, planned and funded with the sole purpose of improving performance in these areas. Enhancing this with further professional development to support our mathematics teachers through the AMESA programme is contributing towards our short term targets in increasing performance levels, as well as our long-term targets of increasing mathematics participation in our FET phase. All of the specialist teacher and learner support material may be found at https://wcedeportal.co.za/. We are delighted to share this content with all the committed Maths teachers across all Provinces.

We share the vision of quality education for every learner and we appreciate AMESA's contribution towards this. It therefore gives me great pleasure to welcome all the Maths teachers from across the country, as well as key stakeholders dedicated to provide quality education in all classrooms in our country. Thank you and enjoy the congress!

Brent Walters
Head of Department – Western Cape Education Department

Plenary Speakers

Arne Jakobsen

Arne Jakobsen is a full Professor of Mathematics Education at the University of Stavanger, Norway and Adjunct Professor at the Inland Norway University of Applied Sciences. He has been a visiting professor at the University of Michigan in the US and University of Cape Town, South Africa. He has experience in many international research and development projects in mathematics education, using lesson study in professional development of teachers and teacher educators. He has successfully been co-leader of the project Improving Quality and Capacity of Mathematics Teacher Education in Malawi (2014–2018) and the project Strengthening Numeracy in Early Primary Education through Professional Development of Teachers in Malawi (2017–2022). Both projects are supported by the Norwegian Agency for Development Cooperation under the Norwegian Programme for Capacity Development in Higher Education and Research for Development. He is also co-leader of the Malawi-Norway Mobility Programme in Mathematics and Mathematics Education (2019–2024), sponsored by the Norwegian Agency for International Cooperation and Quality Enhancement in Higher Education. He is collaborating in research and development projects in Mathematics Education with the University of Cape Town (South Africa) and has previously been a research partner in projects with several universities in Brazil. He is co-leader of the Topic Study Group International Cooperation in Mathematics Education at the 15th International Congress on Mathematical Education–ICME 15 (2024, in Sydney, Australia) and was a member of the same group in ICME-14 (2021, in Shanghai, China). His research interests are mathematics, mathematical knowledge for teaching, lesson study and quantitative studies in mathematics education. He has published more than 80 research articles in refereed journals.

Nicky Roberts

Nicky Roberts is director of Kelello Consulting, a research and design company established in 2000 that works with public and private investors in education. Nicky has degrees from UCT, UWC, UKZN, Cambridge, Wits and UJ. She has worked in research and professorial positions at Wits, University of Johannesburg, and the University of Fort Hare. Her academic focus is on mathematics, languages and technology-enhanced learning. She has published widely with over 50 academic publications, more than 100 technical reports and two edited books. Her latest book with Oxford University Press is co-edited with Prof Hamsa Venkat. It is titled “Early Grade Mathematics in South Africa”.

Plenary Speakers

Charles Nsukukazifani Msipha

Charles Nsukukazifani Msipha's professional journey started in the Caribbean Island of Cuba in September 1983 with a five-year Licentiate in Education programme specialising in mathematics. Thereafter, his main goal has been acquiring and processing mathematical knowledge as a schoolteacher, a teaching assistant in the tertiary education sector, a field worker in-service training of school teachers during the times of the Mathematics Education Project of the University of Cape Town's faculty of education and currently working in the Universities of Technology sector of our Education system.

In his professional/economic endeavours, there has been concurrent interest in enhancing his understanding of the discipline and incorporating ideologies of how it can be presented to the learners in a way that is easily appreciable. This is an essential human activity catalytic to economic and multifaceted human development. Driven by these interests, he completed his Bachelor of Science Honours degree at the University of Cape Town in 1992, and later obtained a Master of Science and a Doctor of Philosophy degree in mathematics from the University of South Africa in 2000 and 2017 respectively.

He is currently stationed at the Tshwane University of Technology since the year 1996. His activities have had three focal points which are: deepening his understanding of the mathematical phenomena, twenty-five years of apprenticing engineering students in mathematics as an essential tool and language for designing and communicating engineering solutions, and three years of similar ongoing engagements with science students.

Regarding the national state of mathematics, he lives with a perpetual pain caused by a sort of a thorn in his flesh of wishing to see both the high school and tertiary education subsystems working together, and collaboratively and decisively putting a visible dent in our **national mathematics problem**.

Kakoma Luneta

Kakoma Luneta is an NRF-rated researcher and professor of mathematics education in the Faculty of Education at the University of Johannesburg, where he has been a faculty member since January 2005. Professor Luneta holds a PhD in mathematics teacher education from the University of Witwatersrand and masters in mathematics teacher education from the University of Sussex, England. His research interest is in mathematics teachers education at secondary and elementary school; mathematics/numeric cognition and professional development and mentorship of mathematics teachers. He has taught mathematics and physics in various northern and southern African countries, the UK and the US. He has supervised to completion several masters and doctoral students from sub-Sahara Africa, Greece and South Korea. He has been appointed a visiting professor of mathematics education in the Faculty of Education of the University of British Columbia in Vancouver Canada, has been a visiting scholar at Stanford University in the US, and was recently a visiting scholar at the University of Cambridge – Centre for Neuroscience Education. He has published five books, over 100 book chapters and articles in accredited journals. He is the Editor in Chief of the newly launched *African Journal of Teacher Education and Development.* ajoted.org. For more information go to: https://kluneta.com.

Plenary Speakers

Memory Dizha

Ms Memory Dizha, Subject Education specialist for mathematics for ECKED in the Western Cape. Memory holds a master's degree in mathematics education (UWC) and postgraduate diploma in Space Science, Geographic Information Systems (GIS) and Remote Sensing through a scholarship from the United Nations. She was awarded the best woman in Space Science in the 2021 class and the best postgraduate project at the African Regional Center for Science and Technology (ARCSTE-E) in Nigeria. Memory Dizha won the Western Cape National Teacher Awards (NTA) for teaching mathematics in GET in 2022. She was the AMESA secretary for Western Cape. Memory Dizha has engaged with many mathematics and science projects like: LEDIMTALI (UWC) which is for maths educators and researchers. She was the STEM club coordinator at Manzomthombo Senior Secondary, where a learner won one of the monthly challenges coordinated by African Bank Maths project. She has been involved in ASSET, Numeric, CAPITEC Foundation for mentoring mathematics student teachers, tutoring programmes for WCED and the UCT 100UP programme. Memory has facilitated many workshops including the CAPS implementation for educators, SASOL INZALO launch, FASMED Maths project from AIMSEC, integrating awareness programmes in schools with SANSA environment club with WESA.

Lizette Schroeder

This year (2023) is Ms Lizette Schroeder's 30th year of service in Mathematics education. During this time, she served as a mathematics teacher, HOD, and mathematics subject adviser for the GET and FET Phases. She started her teaching career at Malibu High School in Bluedowns. After that she took up the position of HOD for mathematics at Groenberg Secondary School in Grabouw. Ms Schroeder served as a mathematics adviser from 1 January 2007 in District North and later District East of the Western Cape Education Department. On 1 May 2019 she joined Protea Heights Academy, a focus school for mathematics and the sciences in Brackenfell, as a teacher and mentor to the mathematics subject team. She is a passionate mathematics teacher whose work is revered by her learners as well as the teachers that she works with. Through her involvement and participation in mathematics activities at community, a school, district, provincial and national level, she gained a wealth of knowledge and expertise in her teaching career. For this, she is very grateful. As an award-winning teacher, she feels greatly honoured and privileged to be nominated to speak at AMESA 2023 Congress to share her professional experiences with mathematics teachers. It is her hope that the mathematics community, makes a difference in the lives of the learners in the Western Province, and South Africa.

Plenary Panel Discussions

The Plenary Panel Discussions promote incisive debate on topical issues in the mathematics education field with invited key players who can open up insights that are valuable for the community to engage with and question.

Panel discussion 1: Mathematics for Hope

Erna Lampen – Chair of Panel discussion 1

Building robust mathematical classroom environments where learners see opportunities for understanding and sense-making through applications of mathematical concepts to everyday real-life contexts.

Panel discussion 2: Mathematics for Hope

Sharon McAuliffe – Chair of Panel discussion 2

Building professional learning communities where teachers deepen their understanding of their mathematical knowledge for teaching in relation to giving learners the opportunities to learn mathematics.

Panel discussion 3: AMESA 30th Anniversary - the past, present and future of AMESA from three of the past presidents

Manare Setati – Chair of Panel discussion 3

Building new future pathways on the role of AMESA Congress across mathematics education communities in South Africa.

Local Organising Committee (LOC)

Congress Director	Connie Skelton
Congress deputy Director	Bronwyn Adonis-Maarman
Academic Coordinator	Duncan Mhakure
Academic Coordination Team	Erna Lampen / Sharon McAuliffe / Agatha Lebethe
How I Teach & Memorabilia	Bronwyn Adonis-Maarman
Workshops & Activity centre	Neil Eddy
Presenters & venues	Connie Skelton / Anita Campbell
Transport	Anita Campbell / Frikkie George
Secretary	Anita Campbell
Treasurer	Anita Campbell
Sponsorship	Andre Lamprecht
Catering	Gary Powell
Registration	CMC
Proceedings and programme	Connie Skelton / Merrick James
Accommodation	CMC
Social programme	Gary Powell / Andre Lamprecht / Ekaterina Rzyankina / Carmelita Basson
Excursions	Byron Abrahams
Opening & closing ceremonies	Bronwyn Adonis-Maarman
Multitasker	Clyde Felix

National Organising Committee (NOC)

The National Organising Committee (NOC) is an AMESA National Council subcommittee involved in national congress tasks and supporting the LOC.

President	Manare Setati
Vice-President	Batseba Mofolo-Mbokane
Academic Committee	Manare Setati / Batseba Mofolo-Mbokane
Treasurer Support	Oniccah Thibodi
Congress Secretary	Kgomotso Pilane
Registration data base support	Nombulelo Mandindi

AGM Agenda

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AGENDA of the 28th AGM: 27th June 2023
Venue: UCT, Cape Town, Western Cape

1. Welcome
2. Finalising the Agenda
3. Apologies
4. Minutes of the 2022 AGM held in Potchefstroom, North West – Kgomotso Pilane
5. National Council Report on the Activities of the Association – Kgomotso Pilane
6. Financial Report and Budget – Oniccah Thibodi
7. President's Report – Manare Setate
8. Motions
9. Elections

Office	Name	Nominated by
President	1. Manare Setati 2. Batseba Mofolo–Mbokane	North West and Limpopo region Gauteng region
Deputy President	1. Zingiswa Jojo 2. Mokotedi Lesego	Gauteng region North West Region
Treasurer	1. Thibodi Oniccah 2. Ishaak Cassim	North West region Gauteng region
Secretary	Audrey Maboe	North west region

10. General – President
11. Closure – President

Activity Centre

Explore, tinker, play, create, innovate!

AMESA Congress 2023 brings back to life the Activity Centre. This is a space for delegates to go at any time from early morning to early evening to explore mathematics through games, puzzles, problems, and numerous other mathematical activities.

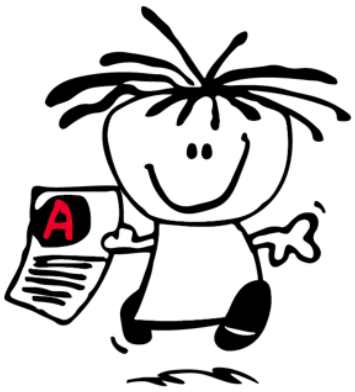
If you are looking for practical ideas to use in the classroom, this should be a must-visit space. It is an interactive space where delegates will have to work with ideas, not just have them presented to them – you will have to get your hands dirty. A range of activities will be on offer with certain focussed events at different times during the course of the programme.

It will be a meeting place that promises to be a highlight of Congress. Come along for a quiet chat, a cup of coffee, a moment of deep thought on a particularly perplexing puzzle on offer, a time to visualise mathematics using videos – a creative space for all.

Although lots of activities will be available at all times of the day, focussed theme activities will take place as follows:

Monday morning	UNLOCKING UBUNTU
	Some ideas for running a mathematics club.
Monday afternoon	THINGS TO MAKE AND DO IN HIGHER DIMENSIONS
	Exploring 3D models of solids, leading to the 4th dimension.
Tuesday morning	LET'S DO THE IMPOSSIBLE AND TRISECT AN ANGLE
	The mathematics of paper-folding.
Tuesday afternoon	BEAUTY ALL AROUND ME
	Mind-blowing geometric constructions.
Wednesday morning	BEAUTY ON A SCREEN
	Exploring mathematics using technology.
Wednesday afternoon	AND THEN IT MOVED
(for those not on excursion)	Animating mathematics using technology.
Thursday morning	BREAK IT DOWN AND BUILD IT UP
	What happens when we cut things up and put them together again.
Thursday afternoon	HOCUS POCUS
	Mathematical magic.
Friday morning	WE END WHERE IT ALL STARTED
	Games from the home of mathematics in Africa.

Legends				
Audience				
FP	IP	SP	FET	MTE
	Presentation types			
LP	Long paper			
SP	Short paper			
HIT	How I Teach			
WS	Workshop			
MM	Maths Market			
DPS	Discussion with plenary speaker			
SIG	Special interest group			
FS	Follow-up session			
COMP	Computer			
AC	Activity centre			
SBH	**Sarah Baartman Hall**			
LS	**All LS venues are in the Leslie Social Sciences Building**			



THE ANSWER SERIES *Your Key to Exam Success*

Monday 26th June 2023

Registration Leslie Social Sciences foyer 08:00–09:45

Opening Ceremony 10:00–11:30

	Opening Ceremony MC: Bronwyn Adonis-Maarman All attendees to be seated by 09:45 please	SBH / LS 2A	10:00–11:30
DPS	**Plenary 1** **Speaker: Arne Jakobsen / Chair: Duncan Mhakure** Using students' reasoning as a resource for developing conceptual understanding	SBH / LS 2A	11:30–12:30

Lunch Leslie Social Sciences foyer 12:30 – 14:00

Parallel Session 1 14:00–16:00

FS	**Follow-up session Plenary 1** Speaker: Arne Jakobsen / Chair: Duncan Mhakure	LS 2A	Monday 14:00–15:00
MM	**Sharp: Talitha Moore** Using the Sharp EL-W535SA to teach concepts in your intermediate phase maths classroom	LS 2A	Monday 15:00–16:00
LP	**Gilbert Pule & Choko Mabele** The impact of language on the mathematics problem-solving skills of Grade 4 learners in township schools	LS 2D	Monday 14:00–15:00
LP	**Alphius Dube** The use of the Photomath application in addition and subtraction of fractions: perceptions of Grade 8 learners.	LS 3A	Monday 14:00–15:00
LP	**Hlamulo Mbhiza** Teachers' communication relating to the concept of quadratic functions in Grade 10 rural classrooms	LS 1E	Monday 14:00–15:00
LP	**Puleng Rankweteke & Kakoma Luneta** The challenges of using information and communication technology (ICT) among mathematics teachers at public schools in Moletlane Circuit, Capricorn District in Limpopo Province, South Africa	LS 2D	Monday 15:00–16:00
WS	**Melanie Gow** Calculations: developing reasoning skills through calculating and developing calculating skills through reasoning	LS 4C	Monday 14:00–16:00
WS	**Neil Eddy** This is so boring – a hopeful way of using the maths 24 game to develop good arithmetic and algebraic habits	LS 4D	Monday 14:00–16:00
WS	**Anita Campbell & Pragashni Padayachee** Exploring the power of ChatGPT to transform mathematics teaching	LS 4G	Monday 14:00–16:00
WS	**Heather Collins & Priviledge Ndlovu** Playing maths games to improve number sense, fluency and a positive disposition to mathematics	LS 4H	Monday 14:00–16:00
WS	**Nothile Kunene, Tom Mosiane, Tshele Moloi & Simon Tachie** Teaching mathematics for understanding gives learners hope to become successful mathematics thinkers	LS 5E	Monday 14:00–16:00
WS	**Patrick Iroanya & Wendy Baumgartner** Taking WhatsApp learning to a higher level: explore learning through an automated and interactive hotline	LS 5F	Monday 14:00–16:00
WS	**Matsie Sebeela** Problem solving and modelling in mathematics education	LS 5G	Monday 14:00–16:00
HIT	**Qhama Ngcobo** Additive relations of two-digit whole numbers using number pictures	LS 2C	Monday 14:00–15:00
HIT	**Letshego Rapulana** Mathematical knowledge for teaching (sum and difference of place values of digits)	LS 3B	Monday 14:00–15:00
HIT	**George Chirume** Mathematics for hope by using tangible coding games	LS 2B	Monday 14:00–15:00
HIT	**Dikeledi Makgele** How I teach measurement in Grade R	LS 2C	Monday 15:00–16:00
HIT	**Audrey Maboe & Bonang Mokwae** Using robotics to enhance active learning in mathematics: 3D objects in geometry using coding and robotics	LS 3B	Monday 15:00–16:00

HIT	**Thato Mthembu** Addition and subtraction of integers in Grade 7	LS 2B	Monday 15:00–16:00
SP	**Dineo Molise** Causes of dyscalculia: A systematic review	LS 1A	Monday 14:00–15:00
SP	**Clemence Chikiwa & Jabulani Sibanda** The nexus between linguistic and semiotic representations, visualisation, and connection making in mathematics	LS1D	Monday 14:00–15:00
SP	**Moyahabo Mabuza** Mathematical problem solving among Grade 7 learners in Mpumalanga rural schools	LS 1A	Monday 15:00–16:00
SP	**Frikkie George & Ekaterina Rzyankina** Problematic topics in high school mathematics required for university mathematics: exploring the NSC Mathematics Examination	LS 1D	Monday 15:00–16:00
WS	**Baatseba Mamaro & Shelton Chadya** Using technology and fun to get on top of linear relationships, functions and graphs	LS Comp 1	Monday 14:00–16:00
MM	**Harshvardhan Rajan** Integrating technology in the classroom using HeyMath!	LS Comp 2	Monday 14:00–15:00
AC	**Things to make and do in higher dimensions** Exploring 3D models of solids, leading to the 4th dimension	LSS Foyer	Monday 14:00–17:30

Tea **Leslie Social Sciences foyer** **16:05 – 16:30**

AMESA Regional Meetings 16:30 – 17:30

Region	Venue
Eastern Cape	LS 4E
Free State	LS 2A
Gauteng	LS 2D
KwaZulu-Natal	LS1A
Limpopo	LS 3A
Mpumalanga	LS 2C
Northern Cape	LS1D
North West	LS 3B
Western Cape	LS 2B

Welcome Cocktail **Leslie Social Sciences Foyer** **17:45–19:00**

Tuesday 27th June 2023

Audience	Type	Presentation	Venue	Time
	DPS	**Plenary 2** **Speaker: Kakoma Luneta / Chair: Duncan Mhakure** Basic theory of educational neuroscience for teachers needed to build connections in teaching and learning mathematics – a review and practice	SBH / LS 2A	08:30–09:30

Parallel Session 2 — 9:35 – 10:35

FS	**Follow up Plenary 2** Speaker: Kakoma Luneta / Chair: Duncan Mhakure	SBH / LS 2A	Tuesday 9:35–10:35
HIT	**Sharon McAuliffe and CPUT students** Teaching patterns by visualising algebraic rules	LS 3B	Tuesday 9:35–10:35
HIT	**Susan Carletti** Drip-feeding problem solving into everyday teaching	LS 2B	Tuesday 9:35–10:35
HIT	**Victoria Nel** Teaching weight and measurement to Grade 3 learners with the use of kitchen scales	LS 5E	Tuesday 9:35–10:35
LP	**Tinyiko Sambo & Tšhegofatšo Makgakga** Grade 3 using games with small groups in diverse mathematics classrooms	LS 1D	Tuesday 9:35–10:35
LP	**Duduzile Sibiya & Anthony Essien** Exploratory talk and code-switching in South African language multilingual mathematics classrooms: a review of research in *Pythagoras*	LS 1A	Tuesday 9:35–10:35
DPS	**Cerene Rathilal & Zurab Janelidze** The Future Mathematicians Programme	LS 2C	Tuesday 9:35–10:35
SP	**Obediah Mumanyi & Mapula Ngoepe** Mathematics for hope: how problem-solving can be enhanced in the teaching and learning of financial mathematics to Grade 7 learners	LS 1E	Tuesday 9:35–10:35
SP	**Tatiana Sango** Understanding the motivation factors of prospective students in the STEM disciplines	LS 4C	Tuesday 9:35–10:35
MM	**HeyMath!: Harshvardhan Rajan** Integrating technology in the classroom using HeyMath!	LS Comp 1	Tuesday 9:35–10:35
MM	**OUP: Linda Roos** Speaking the language of maths with the new Oxford Bilingual Illustrated Maths Dictionaries	LS 2A	Tuesday 9:35–10:35
MM	**Sharp: Talitha Moore** Using the Sharp EL-W535SA for success in your Maths Literacy classroom	LS 2D	Tuesday 9:35–10:35
MM	**Cambridge: Cheri Davidson** Coding and robotics, ChatGPT and the future of education	LS 3A	Tuesday 9:35–10:35
AC	**Let's do the impossible and trisect an angle** The mathematics of paper-folding	LSS Foyer	Tuesday 9:35–10:35

Tea — Leslie Social Sciences foyer — 10:35–11:00

Parallel Session 3 — 11:00–13:00

DPS	**Special Interest Groups**	SBH	Tuesday 11:00–13:00
	Academic Writing (Batseba Mofolo-Mbokane); **Problem Solving (**Manare Setati) **Indigenous Knowledge Systems** (Neil Eddy); **Primary School Teaching (PRIM TED) (**Gary Powell)		
LP	**Pauline Ntsime & Sego Matlala** Performance differences in Mathematics Benchmark Tests	LS 2A	Tuesday 11:00–12:00
LP	**Paul Giannakopoulos & Kakoma Luneta** Geometric riders: a nightmare for teachers and learners? There is light (hope) at the end of the tunnel	LS 3A	Tuesday 11:00–12:00
MM	**The Answer Series: Jenny Campbell** Hands-on Grade 7 problem solving with TAS	LS 2A	Tuesday 12:00–13:00

WS	**Connie Skelton** (Un)common factors and multiples of fractions	LS 5E	Tuesday 11:00–13:00
WS	**Wandile Mangcengeza** Algebra: from number patterns to equations and graphs. The role of reasoning in developing algebraic thinking and algebraic thinking in developing reasoning	LS 4G	Tuesday 11:00–13:00
WS	**Kerryn Leigh Fletcher** Investigations for hope	LS 4H	Tuesday 11:00–13:00
WS	**Kelly Bush** Tangible coding and maths	LS 4D	Tuesday 11:00–13:00
WS	**Julius Olubodun** Constructing multiple digit whole number reasoning: towards long division	LS 5G	Tuesday 11:00–13:00
WS	**Duncan Gray** Fractions: From sharing chocolate bars to algebraic fractions. The role of fractions in developing reasoning and the role of reasoning in developing the fraction concept	LS 6C	Tuesday 11:00–13:00
WS	**Fusi Rantene** Teaching algebraic expressions using manipulatives	LS 6A	Tuesday 11:00–13:00
WS	**Yusuf Johnson** Functions everywhere in mathematics!	LS 4C	Tuesday 11:00–13:00
MM	**iRainbow: Sijabulile Hlengwa** iRainbow Educational Software	LS 2C	Tuesday 11:00–12:00
HIT	**Lizette Booys** How to teach fractions using music	LS 3B	Tuesday 11:00–12:00
HIT	**Bronwyn Adonis-Maarman** Reflections on teaching in an eLearning school	LS 2B	Tuesday 11:00–12:00
MM	**The Answer Series: Anne Eadie** TAS Maths magic for success (FET)	LS 2D	Tuesday 11:00–12:00
MM	**Casio: Astrid Scheiber** CASIO 4U	LS 2D	Tuesday 12:00–13:00
SP	**Alfred Msomi & Ekaterina Ryzankina** Holistic approach to learners' support: luxury or necessity	LS 1D	Tuesday 11:00–12:00
LP	**Jeremiah Maseko** Disrupted by COVID-19 lockdowns and attendance: what prior knowledge do Grade 8 learners bring to class on addition and subtraction of fractions	LS 1A	Tuesday 11:00–12:00
WS	**Given Mvubu & Siphuxolo Sjula** Getting intermediate and senior phase learners fluent on the four basic maths operations through activities and games	LS Comp 1	Tuesday 11:00–13:00
AC	**Let's do the impossible and trisect an angle** The mathematics of paper-folding	LSS Foyer	Tuesday 11:00–13:00

Lunch — Leslie Social Sciences foyer — 13:00–14:00

Parallel Session 4 — 14:00–16:00

LP	**Margaret Moloto, France Machaba & Mogalatjane Matabane** Working with Grade 6 learners' thinking in comparing fractions: the case of a behaviourist and constructivist teacher	LS 2D	Tuesday 14:00–15:00
LP	**Thabani Buthelezi & Batseba Mofolo-Mbokane** Analysis of Grade 11 November 2019 final examination questions on the concept of functions in terms of Webb's depth of knowledge	LS 6A	Tuesday 14:00–15:00
MM	**Sharp: Talitha Moore** Using the Sharp EL-W535SA for fun in your Senior Phase maths classroom	LS 2A	Tuesday 15:00–16:00
MM	**MML: Thandi Khosa & Benadette Aineamani** How I select examples to teach challenging concepts	LS 2D	Tuesday 15:00–16:00

MM	**Macmillan: Nhlanhla Sibanyoni** How to meet the needs of the 21st century learners	LS 3A	Tuesday 15:00–16:00
WS	**Stephanie Alvarez** Geometric reasoning: the journey from playing with shapes to more formal reasoning	LS 4C	Tuesday 14:00–16:00
WS	**Michelle du Toit** Transformation, compassless angle bisection, midpoint and circle theorems	LS 4D	Tuesday 14:00–16:00
WS	**Tatiana Sango & Sanet Steyn** NBT Mathematics and quantitative literacy: exploring the connections and gaining insights	LS 4G	Tuesday 14:00–16:00
WS	**Melanie Gow** Measurement: from direct comparison to using formulae. Developing reasoning through measuring & using reasoning to increase efficiency	LS 4H	Tuesday 14:00–16:00
WS	**Mercia van Wyk** Place value worksheet	LS 5E	Tuesday 14:00–16:00
WS	**Sharon Mc Auliffe & CPUT students** Using patterns to teach algebraic reasoning	LS 6A	Tuesday 14:00–16:00
HIT	**Nondumiso Mnyamana** Utilising differentiated instruction to meet the diverse needs of the learners when teaching different types of angles	LS 3B	Tuesday 14:00–15:00
HIT	**Siya Nyathi** Using the LESH translation model to connect fractions	LS 2B	Tuesday 14:00–15:00
HIT	**Herman Tshesane** How I teach complex numbers for conceptual understanding	LS 1E	Tuesday 14:00–15:00
MM	**OUP: Yolyn Jacobs** Coding and robotics: a turn-key coding and robotics solution enabling educational institutions to teach the STEM-based curriculum in the classroom	LS 3B	Tuesday 15:00–16:00
WS	**Given Mvubu & Siphuxolo Sjula** Negative about negatives	LS Comp 1	Tuesday 14:00–16:00
LP	**Nkambule Adam** Exploring how Grade 3 teachers assess addition and subtraction for conceptual understanding	LS 1A	Tuesday 14:00–15:00
LP	**Mildret Ncube & Mapula Ngoepe** Exploring the changes brought about by using concept-based instruction in the teaching and learning of mathematics	LS 1D	Tuesday 14:00–15:00
LP	**Gordon Sekano, Dorothy Laubscher, & Roxanne Bailey** Technology-supported cooperative learning professional development: Hope for a new teacher professional development strategy	LS 2C	Tuesday 14:00–15:00
LP	**Pragashni Padayachee & Thabiso Khemane** ChatGPT for mathematics teaching and learning: a game changer or a cautionary tale?	LS 1E	Tuesday 15:00–16:00
SP	**Clemence Chikiwa & Jabulani Sibanda** The nexus between linguistic and semiotic representations, visualisation, and connection-making in mathematics	LS 1A	Tuesday 15:00–16:00
SP	**Nombulelo Mbokazi** Exploring mathematics teachers' use of technology-based tools to teach Grade 10 Euclidean geometry in selected schools in KwaZulu-Natal, South Africa.	LS 1D	Tuesday 15:00–16:00
AC	**Beauty all around me** Mind-blowing geometric constructions	LSS Foyer	Tuesday 14:00–17:00

Tea **Leslie Social Sciences foyer** **16:00–16:30**

AMESA Annual General Meeting (Agenda on page 11) **SBH / LS 2A** **16:35–17:35**

Cultural Evening – The Lookout, Granger Bay **18:00–22:00**

Return transport from UCT to The Lookout

Wednesday 28th June 2023

Parallel Session 5 — 08:30–10:35

FS	**Panel Discussion** Chair: Erna Lampen Panelists: Kakoma Luneta, Nicky Roberts, and Memory Dizha Building robust mathematical classroom environments where learners see opportunities for understanding and sense-making through applications of mathematical concepts to everyday real-life contexts.	SBH / LS 2A	Wednesday 08:30–10:35
LP	**Zoleka Gula & Zingiswa Jojo** Using indigenous artefacts to enhance the learning of geometry in primary schools	LS 3A	Wednesday 08:30–09:30
LP	**Anthony Williams & Rajendran Govender** The use of computer tablets in the teaching of mathematics	LS 2D	Wednesday 08:30–09:30
LP	**Mashudu Mokhithi, Anita Campbell, Jonathan Shock, & Pragashni Padayachee** Mathematical thinking workshops: bridging the gap from high school to university	LS 1A	Wednesday 09:35–10:35
LP	**Pakeezah Rajab & Sharlene Olivier** How personality and interest affect mathematical performance in Grade 9 Gauteng pupils	LS 2D	Wednesday 09:35–10:35
LP	**Wisani Hlangwani, Zwelithini Dhlamini & Kabelo Chuene** Exploring learners' conceptual obstacles of a quadratic function: A case of vertex concept	LS 3A	Wednesday 09:35–10:35
WS	**Permie Isaac, Lorna Sako & Thobeka Ndamase** Using the Bala Wande training videos – ideas for creative teaching of Foundation Phase mathematics	LS 4C	Wednesday 08:30–10:35
WS	**Kerryn Leigh Fletcher, Stephanie Alvarez & Wandile Mangcengeza** Learner misconceptions revealed through a large scale impact evaluation	LS 4D	Wednesday 08:30–10:35
WS	**Neil Eddy** Magical hope: a path from noughts and crosses through African games to magic squares and deep algebra	LS 4G	Wednesday 08:30–10:35
WS	**Matthew Olayiwola** How formative assessment and reflection improve the success rate in a mathematics lesson	LS 5F	Wednesday 08:30–10:35
WS	**Andrew Lewis** Sense making in Senior Phase algebra	LS 4H	Wednesday 08:30–10:35
WS	**Susan Carletti** Problem solving strategies in Grades 7 to 9	LS 5E	Wednesday 08:30–10:35
HIT	**Victoria Nel** Teaching weight and measurement to Grade 3 learners with the use of kitchen scales	LS 3B	Wednesday 08:30–09:35
HIT	**Moleko Matshidiso & Thamae Thabo** Making the 3D solids concept accessible through an activity-based teaching approach	LS 2C	Wednesday 08:30–09:35
HIT	**Moses Basitere & Anita Campbell** Student-centred flipped classrooms with whiteboard problem solving	LS 2B	Wednesday 08:30–09:35
MM	**OUP: Sharon Villette** Blitz Maths: A fun way to develop and consolidate mental maths strategies in young learners	LS 2A	Wednesday 08:30–09:30
MM	**HeyMath! : Harshvardhan Rajan** Integrating technology in the classroom using HeyMath!	LS Comp 1	Wednesday 09:30–10:35
MM	**Sharp: Talitha Moore** Using the Sharp EL-W535SA for success in your FET maths classroom	LS 2A	Wednesday 09:35–10:35
MM	**The Answer Series: Jenny Campbell** Spotlight on our new TAS Gr 7 book	LS 3B	Wednesday 09:30–10:35
LP	**Ratham Hlupeni & Clemence Chikiwa** Development of geometric problem-solving skills of a selected Grade 11 mathematics class: a case study	LS 1D	Wednesday 09:30–10:35
LP	**Qetelo Moloi & Faith Hlungulu** Using the Rasch model to investigate differential item functioning in trans-languaged English and isiXhosa PrimTEd mathematics tests	LS 1E	Wednesday 09:30–10:35

AC	**Beauty on a screen** Exploring mathematics using technology		LSS Foyer	Wednesday 09:30–10:35

Tea — Leslie Social Sciences foyer — 10:35–11:00

DPS	**Plenary 3** **Speaker: Nicky Roberts / Chair: Duncan Mhakure** It is time for a primary mathematics curriculum review in South Africa		SBH / LS 2A	Wednesday 11:00–12:00

Parallel Session 6 — 12:05–13:05

FS	**Follow up Plenary 3** Speaker: Nicky Roberts / Chair: Duncan Mhakure It is time for a primary mathematics curriculum review in South Africa		SBH	Wednesday 12:05–13:05
HIT	**Dikeledi Makgele** How I teach measurement in Grade R		LS 2C	Wednesday 12:05–13:05
HIT	**Letshego Rapulana** Sum and difference of place values of digits		LS 3B	Wednesday 12:05–13:05
HIT	**Daniel Krupanandan** "Summative" or "Umbrella" teaching strategies to teach composite conceptual skills and knowledge within a single teaching example		LS 1E	Wednesday 12:05–13:05
HIT	**Yasheemah Williams** First year student engagement in a quantitative literacy classroom.		LS 2B	Wednesday 12:05–13:05
MM	**Optimi: Kevin Price** OPTIMIsing your classroom		LS 3A	Wednesday 12:05–13:05
MM	**Cambridge: Gaynor Cozens** Making mathematics fun – how to guide parents and caregivers with maths activities at home		LS 2A	Wednesday 12:05–13:05
MM	**OUP: Michelle Sephton** Oxford EduZone: making blended learning work in your maths classroom		LS 3A	Wednesday 12:05–13:05
WS	**Alfred Msomi** Teaching and learning of transformation geometry using GeoGebra		LS Comp 1	Wednesday 11:00–13:05
AC	**Beauty on a screen** Exploring mathematics using technology		LSS Foyer	Wednesday 12:05–13:05

Wednesday afternoon excursions (packed lunch) — 13:15–18:00

AC	**And then it moved** Animating mathematics using technology		LSS Foyer	Wednesday 14:00–16:00

Thursday 29th June 2023

DPS	**Plenary 4** **Speaker: Memory Dizha / Chair: Duncan Mhakure** The future of mathematics in the South African context		SBH / LS 2A	Thursday 08:30–09:30

Parallel Session 7 — 9:35–10:35

DPS	**Plenary 5** **Speaker: Lizette Schroeder / Chair: Duncan Mhakure** Reflections on teaching and learning of mathematics in schools from an award-winning teacher		SBH / LS 2A	Thursday 09:35–10:35
HIT	**Thulelah Takane** Teaching for sense making in Foundation Phase home language classrooms		LS 3B	Thursday 09:35–10:35

HIT	**Rolene Liebenberg, Alicia Louw & Anika Fourie** How I teach the distributive law in primary school	LS 2C	Thursday 09:35–10:35
HIT	**Neil Eddy** Go with the flow: developing a module of work for the Senior Phase involving flow diagrams	LS 2B	Thursday 09:35–10:35
LP	**Rosina Ngoako, Gabriel Mphuthi, & Mapula Ngoepe** Grade 4 teachers' perceptions of investigations as a way to engage learners in problem-solving	LS 2D	Thursday 09:35–10:35
LP	**Erna Lampen & Sharon McAuliffe** Using test answers to interpret aspects of the mathematical proficiency of preservice primary school teachers	LS 1D	Thursday 09:35–10:35
LP	**Mmachuene Hlako & Judah Makonye** Examining TVET mathematics lecturers' professional noticing of students' productive struggle in calculus tasks: fostering growth and development	LS 1E	Thursday 09:35–10:35
LP	**Puleng Rankweteke & Kakoma Luneta** The challenges of using information and communication technology (ICT) among mathematics teachers at public schools in Limpopo Province, South Africa	LS 3A	Thursday 09:35–10:35
MM	**The Answer Series: Susan Carletti** Grades 10 & 11 Level 3 & 4 questions with TAS	LS 1A	Thursday 09:35–10:35
MM	**Sharp: Talitha Moore** Using the Sharp EL-W535SA for fun in your Senior Phase maths classroom	LS 2A	Thursday 09:35–10:35
HIT	**Bronwyn Adonis-Maarman** Top tips for using Desmos to teach functions from Grade 8 to Grade 12	LS Comp 2	Thursday 09:35–10:35
HIT	**Collen Manganyana** How I teach inequalities associated with functions using GeoGebra. A case of Grade 10	LS Comp 1	Thursday 09:35–10:35
AC	**Break it down and build it up** What happens when we cut things up and put them together again	LSS Foyer	Thursday 09:35–10:35

Tea — Leslie Social Sciences foyer — 10:35–11:00

Parallel Session 8 — 11:00–13:00

DPS	**Panel Discussion** **Chair:** Sharon McAuliffe **Panelists:** Arne Jakobsen, Charles Msipa, & Rolene Liebenberg **Mathematics for Hope:** **Building professional learning communities where teachers deepen their understanding of their mathematical knowledge for teaching in relation to giving learners t**he opportunities to learn mathematics	SBH / LS 2A	Thursday 11:00–13:00
LP	**Nts'sas Lisema** Investigating students' difficulties in algebraic and graphical representation of the inverse of quadratic functions	LS 2D	Thursday 11:00–12:00
LP	**Thamae Matheko & Moleko Matshidiso** Making Euclidean geometry accessible to Grade 11 learners: a the universal design for a learning approach	LS 3A	Thursday 11:00–12:00
LP	**Stephen Nkwashu & Ngoveni Amos** Exploring students' challenges when answering questions related to angle measurement	LS 3A	Thursday 12:00–13:00
SP	**Bongani Mlambo** Enhance learning of trigonometry among Ivory Park Secondary School learners	LS 1A	Thursday 12:00–13:00
HIT	**Mary-Ann Keswa** Place value (Numbers, Relationships and operations)	LS 1E	Thursday 12:00–13:00
WS	**Matsie Sebeela** Problem solving and modelling in mathematics education	LS 4D	Thursday 11:00–13:00
WS	**Jenny Campbell** Connections: creating meaningful connections between Grade 7 mathematics and high school mathematics	LS 4H	Thursday 11:00–13:00
WS	**Susan Carletti** Playing with functions in Grades 8 and 9	LS 4G	Thursday 11:00–13:00

WS	**Anita Campbell & Pragashni Padayachee** Exploring the power of ChatGPT to transform mathematics teaching	LS 4C	Thursday 11:00–13:00
WS	**Mmapula Seoloane, Vuyokazi Mafilika & Ingrid Sapire** Experience the Bala Wande Foundation Phase maths programme activities	LS 1D	Thursday 11:00–13:00
WS	**Bianca Keykaan** Place value – easy yet powerful	LS 4E	Thursday 11:00–13:00
WS	**Memory Dizha & Duncan Mhakure** Mathematical modelling in South African schools	LS 2C	Thursday 11:00–13:00
WS	**Andrew Lewis** 2 + 2 = 5 for very large values of 2	LS 5G	Thursday 11:00–13:00
MM	**MML: Thandi Khosa** Maths concepts and skills for coding and robotics	LS 3B	Thursday 11:00–12:00
MM	**Casio: Lauren Izaaks** CASIO 4U	LS 2D	Thursday 12:05–13:05
WS	**Joseph August & Danwill Fortuin** Transformation of triangles to study the properties of quadrilaterals	LS Comp 1	Thursday 11:00–13:00
HIT	**Bronwyn Adonis-Maarman** Top tips for using Desmos to teach functions from Grade 8 to Grade 12	LS Comp 2	Thursday 11:00–12:00
AC	**Break it down and build it up** What happens when we cut things up and put them together again	LSS FOYER	Thursday 11:00–13:00

Lunch — Leslie Social Sciences foyer — 13:00 – 14:00

Parallel Session 9 — 14:05–15:05

AMESA Phase Committees

Foundation Phase Patricia Walaza	LS 2A	
Intermediate Phase Kgomotso Pilane	LS 2D	
Senior Phase Mzwakhe Sokutu	LS 3A	
FET Mathematics Steven Muthige	LS 1E	
FET Mathematical Literacy Bronwyn Adonis-Maarman	LS 1D	
Technical Mathematics Ishaak Cassim	LS 2B	
Teacher Education Gary Powell/ Sharon McAuliffe	LS 1A	

Parallel Session 10 — 15:05–16:05

FS	**Follow up Plenary 4** Speaker: Memory Dizha / Chair: Duncan Mhakure The future of mathematics in the South African context	SBH	15:05–16:05
LP	**Methuseli Moyo, France Machaba & Mogalatjane Matabane** Misconceptions of Grade 9 learners in comparing fractions	LS 3B	Thursday 15:05–16:05
LP	**Nnane Rakhudu & Zingiswa Jojo** Level 4 students' understanding of optimisation tasks in calculus: a case of South African TVET colleges	LS 3A	Thursday 15:05–16:05
LP	**Thulisile Nkambule** Code-switching and peer teaching in a multilingual classroom to teach algebra	LS 2D	Thursday 15:05–16:05
LP	**Benjamin Tatira** Enhancing Grade 11 learners' procedural fluency in solving quadratic inequalities using graphical representation	LS 2B	Thursday 15:05–16:05
HIT	**Moleko Matshidiso & Thamae Matheko** Making 3D solids concepts accessible through an activity-based teaching approach	LS 2C	Thursday 15:05–16:05
MM	**Vivlia: Palesa Tsuebeane & Gerikayi Matimbe** The use of manipulatives in the teaching and learning of mathematics	LS 2A	Thursday 15:05–16:05

SP	**Dineo Molise & Luneta Kakoma** Causes of dyscalculia: a systematic review	LS 1A	Thursday 15:05–16:05
SP	**Takalani Sivhada & Eva Makwakwa** Reviewing literature with rapid review methods: possible factors contributing to mathematics anxiety	LS 1E	Thursday 15:05–16:05
AC	**Hocus Pocus** Mathematical magic	LSS Foyer	Thursday 14:05–16:05

Tea — **Leslie Social Sciences foyer** — **16:05 – 16:35**

Parallel Session 11 — 16:35–17:35

AC	**Hocus Pocus** Mathematical magic	LSS Foyer	Thursday 16:35–17:35

Gala dinner — **19:00–22:00**

Friday 30th June 2023

Parallel Session 12 — 08:30–09:30

FS	**Follow up Plenary 5** Speaker: Lizette Schroeder / Chair: Clyde Felix	LS 2A	Friday 08:30–09:30
	Reflections on teaching and learning of mathematics in schools from an award-winning teacher		
HIT	**Susan Carletti** Drip-feeding problem solving into everyday teaching	LS 2C	Friday 08:30–09:30
HIT	**Tsholele Mothibeli** Problem solving and mental maths	LS 2B	Friday 08:30–09:30
HIT	**Thato Mthembu** Inducing the effectivity of manipulatives in teaching and learning addition and subtraction of integers	LS 3A	Friday 08:30–09:30
SP	**Tatiana Sango** Understanding the motivation factors of prospective students in the STEM disciplines	LS 1D	Friday 08:30–09:30
SP	**Frikkie George & Ekaterina Rzyankina** Problematic topics in high school mathematics required for university mathematics: exploring the NSC Mathematics Examination	LS 1E	Friday 08:30–09:30
AC	**We end where it all started** Games from the home of mathematics in Africa	LSS Foyer	Friday 08:30–10:00

Tea — **Leslie Social Sciences foyer** — **09:35–09:55**

DPS	**Plenary 6** **Speaker: Charles Msipha / Chair: Duncan Mhakure**	SBH	Friday 10:00–11:00
	Beliefs and attitudes give form and content to the motivation for teaching mathematics		
FS	**Follow up Plenary 6** Speaker: Charles Masiphar / Chair: Duncan Mkahure	SBH	Friday 11:00–11:30
	Reflections on teaching and learning of mathematics in schools from an award-winning teacher		

Closing ceremony — **11:30–12:00**

Lunch — **Leslie Social Sciences foyer (packed lunch)** — **12:00–13:00**

UCT Campus map