The Association for Mathematics Education of South Africa

2024

29th Annual National Congress

17th – 21st June 2024

Central Campus, Kimberley, Northern Cape

CONGRESS PROGRAMME

NumberSense™

Mathematics Programme

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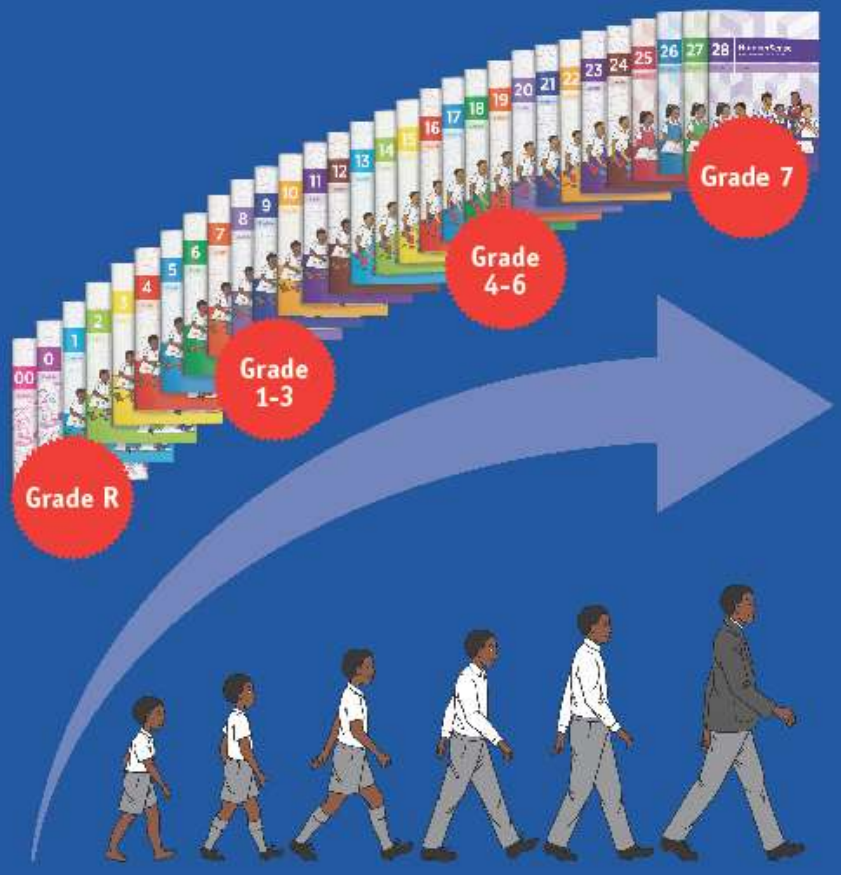

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Message from the Vice-Chancellor of Sol Plaatje University

Welcome to Sol Plaatje University.

We are honoured that you chose to hold the 29th Annual National Congress of AMESA in Kimberley and hope that you will have an opportunity to explore the fascinating Northern Cape Province.

Sol Plaatje University is the perfect location for you to reimagine mathematics in a digital space. We are striving to be a digitally empowered university that makes use of digital technologies to enhance the University's operations, academic delivery, and research capabilities.

Rapid advancements in digital technologies will continue to reshape the higher education landscape as universities increasingly adopt online learning platforms, artificial intelligence, and data analytics to enhance teaching, research, and administrative processes.

The growth of online education platforms allows us to reach a broader student base and offer flexible learning options. In this way we ensure that we expand the means of access to higher education and begin to offer mathematical learning to more people.

As we reimagine mathematics in a digital space, we can use our learning management systems analytics tools to monitor and evaluate student success and enhance student support services. A holistic approach to student support produces well rounded graduates who can make a significant contribution to their communities.

In addition, as we extend our reach into the digital domain, we must take others along with us by providing digital literacy programmes and IT training to the community thereby improving overall digital access and competency in society.

I wish you robust discussions and engagements and an overall successful conference.

Professor Andrew M Crouch
Vice-Chancellor and Principal

Message from the Deputy Vice-Chancellor of Sol Plaatje University

Our country is in danger of falling even further behind if we don't provide better mathematics education at school level, and that cannot happen if we don't ensure that our mathematics teachers are better equipped in terms of their discipline knowledge and pedagogical abilities as well as on how to deal with the conditions, they will encounter in township schools especially. The majority of our learners are not being taught mathematics in their mother tongue making difficult concepts even tougher to grasp. We need AMESA and similar platforms to come up with innovative ways in which modern technology can be used to incorporate aspects of indigenous knowledge and mother tongue instruction into the teaching of mathematics, and while we're at it why not improve the enjoyment of mathematics by learners, students and teachers because enjoyment usually translate to better internalization of knowledge. Best of luck with your deliberations and discussions, and may the solutions you recommend have far reaching implications for the betterment of mathematics education.

Professor Debrah Meyer
Deputy Vice-Chancellor: Teaching and Learning

Message from the AMESA PRESIDENT (ACTING)

Welcome to AMESA 29th Annual National Congress, 17 June to 21 June at Sol Plaatje University (Central campus), Kimberly Northern Cape. We are back at Kimberly after the 2014 congress that was attended by close to 1 000 delegates, ten years ago. This time we targeted 2 000 delegates. "DOUBLE IT". We come back at the time where Northern Cape now have a University, Sol Plaatje University (SPU). AMESA is not only bringing mathematics teachers, researchers (nationally and internationally), publishers, mathematics specialists and department of education officials together, but it advertises the Sol Plaatje University to students via AMESA delegates. We thank the management of Sol Plaatje in availing their campus for AMESA activities for the whole week (17 to 21 June), including the academics who leads the LOC. As President, I extend my gratitude to the Northern Cape Local Organising Committee and the National Organising Committee that made this congress a success. I thank Professor Percy Sepeng, Our Congress Director, for leading this team, despite challenges we had, especially regarding the academic programme that was affected by the long leave of absence by former Academic Coordinator.

AMESA wish to thank the University of the Witwatersrand for its continuous support as the main sponsor. This year, in addition to SPU, our sponsorship extended to the Department of Basic Education (DBE) who sponsored an international Speaker, Prof Zhang from China as well as the Northen Cape Education Department for sponsoring most activities for this congress. The continuous sponsorship from Department of Education from different provinces that pay for between 50 to 200 teachers yearly cannot go unnoticed. It is my hope that you will all benefit from all presentations (long papers, short papers, how I teach and the many workshops) prepared in line with a vibrant theme stimulated by what we learnt and experienced during Covid-19 pandemic, The Congress theme is: **Re-imagining Mathematics in a digital space.** This year, the primary school workshops are catered for (many) from powerful presenters. I want to thank all sponsors, presenters, teachers, lecturers, students, mathematics specialists, researchers and all interested in mathematics who made this congress a success in this Cold Kimberely Weather. Without you, this congress will never be a success. My gratitude goes to the Editors of the AMESA Publications (LTM and Pythagoras) and the Webmaster for keeping AMESA alive the whole year, and our Webmaster. AMESA send condolences to Gavin Abrahamse family, who suddenly passed away in January after services for many decades as LTM publisher. I look forward to spending a mathematical week with you, and I wish you the very best for this 29th congress 2024. For the new National Executive that will be elected, I say Revive AMESA.

Dr Batseba Mofolo-Mbokane
Chair: Congress 2024 National Organising Committee (Acting AMESA President)
AMESA Vice-President

Message from the Congress Director

Distinguished Delegates,

It is my great pleasure to welcome you all to the AMESA Congress 2024, hosted in the historic and vibrant city of Kimberley, known as the City of Diamonds. As we gather here, united by our shared passion for mathematics and education, I am filled with anticipation for the days ahead and the remarkable exchanges we are about to experience.

This year's theme, "**Reimagining Mathematics in a Digital Space**," is both timely and critical. As we navigate an increasingly digital world, the ways in which we teach and learn mathematics must evolve. This Congress provides us with an invaluable opportunity to explore innovative methods, integrate technology into our classrooms, and rethink our approach to mathematics education.

The roles of Mathematics Teachers, Mathematical Literacy Teachers, and Mathematics Education Academics from our universities and colleges are indispensable in this journey. You are the architects of our future, guiding the next generation through the complexities of mathematics. Your dedication to teaching not only imparts knowledge but also inspires curiosity and a love for learning among students.

We also acknowledge the invaluable support from our sponsors and business partners. Your contributions are pivotal in driving forward the mission of enhancing mathematics education. Fostering collaborations and providing resources, enable us to implement groundbreaking initiatives and research that will shape the future of education in our country.

Research and the scholarship of teaching and learning mathematics are the bedrock of educational progress. Through rigorous inquiry and sharing of best practices, we can continually improve and adapt our methods to meet the evolving needs of our students. The insights and innovations that arise from this Congress will undoubtedly contribute to the national and global discourse on mathematics education.

Continuing professional development for mathematics teachers, as overseen by the South African Council for Educators (SACE), remains a cornerstone of our efforts. It is through ongoing learning and professional growth that teachers can stay abreast of new methodologies, technologies, and pedagogical strategies. I encourage each of you to engage fully and optimally in the sessions and discussions over the next few days. Share your insights, ask questions, and collaborate with your peers. Your active participation is what will make this Congress a success, driving forward the collective knowledge and practice of mathematics education.

I would like to extend my heartfelt thanks to the Local Organizing Committee members for their outstanding efforts in successfully organizing this year's Congress. Your perseverance, hard work, and meticulous planning have been instrumental in making this event possible. Additionally, I commend the firm support from the National Organizing Committee and the entire AMESA community. Your collaboration and commitment have been vital in bringing us all together for this significant event.

Lastly, I wish you all an enjoyable and enriching experience at the Congress and during your excursions in Kimberley. May this event not only enhance your professional expertise but also leave you with cherished memories of camaraderie and discovery. Thank you for your dedication to the field of Mathematics Education. Let us work together to reimagine and transform the future of mathematics in our digital age.

Professor Percy Sepeng (Congress Director)

Message from the AMESA Northern Cape National Representative

Welcome to the 29th National Annual Congress of AMESA. It has been a hectic year of planning since 2023. We are delighted to welcome all delegates to Sol Plaatje University, a relatively new university in the Northern Cape, Sol Plaatje University (SPU). We are, indeed, grateful for all the support given by the staff of the university. We are also thankful for the support of the Northern Cape Department of Education for assisting us with transport and for sponsoring teachers to attend this prestigious congress. This year mark the 31st anniversary of AMESA and we need to remind ourselves about the aim of AMESA as the voice for the Mathematics in our country and beyond. Congress 2024 gives our teachers a platform to learn about AMESA and its activities as well as from the numerous presentations which are aimed at improving the quality of teaching and learning of Mathematics in our country.

To all our teachers remember that AMESA is your Professional body and gives you the following:

- It is a platform for teacher development
- It is a platform for PLC in Mathematics
- AMESA is highly regarded by the DBE as it reviews the grade 12 papers prior to the release of the Grade 12 results.
- AMESA is a platform to share information or knowledge through the presentations such as long and short papers, workshops and “How I teach” sessions.
- AMESA provides a home to Academics to further their studies and do more research and encourages teachers to be involved in reflective practices and engage in their own research

Enjoy your stay in Kimberley and SPU.

Simon Kantwane

Northern Cape AMESA National Representative

Plenary Speakers

Prof Allyson Rogan-Klyve International Plenary Speaker

Professor Allyson Rogan-Klyve is an associate professor of mathematics and science education at Central Washington University in Ellensburg, Washington. She is the head of the Science and Mathematics Education department and director of the TeachSTEM program which routinely certifies the highest number of mathematics and science teachers in the state of Washington. She received her bachelor's degree in chemistry and religion from Hamline University in St. Paul, Minnesota. Her master's degree in science education from the University of Massachusetts in Amherst, Massachusetts, with a PhD in science education from the University of Oregon in Corvallis, Oregon. She is currently on sabbatical from Central Washington University and serving as a visiting scholar in the Education Department at Rhodes University. She has experience in both teaching and preparing pre-service teachers across the grades R-12 spectrum though currently she is focusing mainly on mathematics and science at the secondary level. Currently her main area of scholarship focuses on understanding the learning affordances of project-based learning as a key classroom pedagogy as well as exploring ways to ensure that it is culturally responsive to the learners experiencing it. Further, she has interests in supporting teacher uptake and enactment of this pedagogy, especially teachers from underserved backgrounds such as rural communities.

Prof Qinqiong Zhang International Plenary Speaker

Professor Qinqiong Zhang is the Professor in the School of Education, Fujian Normal University in China and a teacher educator where he lectures Mathematics Education for graduate and post graduate students. He has worked and studied in Australia where he obtained his doctoral degree (Joint Ph.D program of Southwest University, China, & The University of Melbourne, Australia). He also worked in several African countries on international projects. His research interests include collaborative learning in Mathematics, teacher professional development and primary mathematics teaching and learning. He has published extensively the field of Mathematics education. His papers focus on mathematical modelling, lessons study of elementary mathematics, curriculum and assessment, mainly in Primary school mathematics He is one of the lecturers that presented in the Mathematics Seminar at Zhejiang Normal university for international teachers and officials.

Dr. Dimpho Mothibi Northern Cape Speaker

Dr Dimpho is a distinguished academic with a profound background in applied mathematics. Having earned her undergraduate degree from North-West University and her master's degree from Stellenbosch University, and a Ph.D. in applied mathematics from North-West University Mahikeng Campus. With over a decade of experience in academia, Dimpho currently serves as a senior lecturer and acting head of department at **Sol Plaatje University**. With her passion for technology and applying mathematics in real life contexts, She is at the forefront of educational innovation, seamlessly integrating technology into teaching and learning. Recognizing that traditional methods may fail to engage

students, she passionately advocates for the transformative power of technology in mathematics education. By infusing interactive tools and digital platforms, she plays a role in fostering a dynamic environment where students thrive and excel. Her commitment to innovation redefines the landscape of mathematics education, inspiring learners to embrace the beauty and complexity of the subject.

Dr Mothibi`s dedication extends beyond the classroom as she actively engages in research, focusing on the modelling and symmetries of differential equations, garnering recognition through publications in prestigious journals and presentations at international conferences. Moreover, she is driven by a fervent commitment to nurturing young minds, offering mentorship, and tutoring to high school students, thus fostering a love for mathematics, and promoting STEM education within her community. Through her relentless pursuit of excellence and passion for educational outreach, Dimpho inspires the next generation of mathematicians and contributes significantly to the advancement of applied mathematics.

Prof Eunice Gogo Mphako-Banda SAMS Speaker

Prof Mphako-Banda journey in mathematics started at the University of Malawi where she graduated (BedSc) in 1992. Followed by a Postgraduate Diploma in Mathematics from the University of Sheffield, United Kingdom, in 1994, MSc in Mathematics from the University of Manchester, United Kingdom in 1995 and PhD in Discrete Mathematics from Victoria University of Wellington, New Zealand in 2001. Her academic career started at the Department of Mathematical Sciences, University of Malawi in 1993 as Associate Lecturer, then rose to the rank of Senior Lecturer and in 2003 became the Head of School. She joined the University of KwaZulu-Natal, School of Mathematical Sciences in 2007 as a Lecturer. In September 2008, she joined the University of the Witwatersrand, School of Mathematics as a Lecturer, became a Senior Lecturer in December 2011, Associate Professor in December 2013 and Professor in March 2019.

Her current research interests include Matroid Theory (with focus on matroid construction and polynomials), Low- Dimension Topology-Knot Theory (her interest vary from knot invariants to knot construction), Combinatorics and Graph Theory. She utilizes Combinatorics and Graph Theory as tools for solving problems in Matroid Theory and Knot Theory. Prof Mphako-Banda is a member of the South Africa Mathematical Society (SAMS), the Southern Africa Mathematical Sciences Association(SAMSA) and South Africa Women in Science and Engineering (SAWISE). Throughout her academic journey, she distinguished herself as a recipient of prestigious scholarships and in 2021, she was the recipient of the Womandla STEAM award in Mathematics.

Ms TC Nkosi-Mnanzana A Mathematics Teacher

Ms TC Nkosi-Mnanzana is a dedicated Mathematics enthusiast and teacher who began her career at St Andrews School for Girls in Johannesburg after completing her BEd degree, cum laude. She showed early interest in integrating technology into teaching and became a SMART certified educator, even traveling to SMART technologies headquarters in Canada to explore its potential for learner-centered classrooms. Transitioning to Pioneer Academy, she contributed to the development of their high school and engaged in cultural development following a merger with Nova Academy, forming Nova Pioneer. Later, she moved into corporate social investment in education as Programme Director of Thandulwazi Maths and Science Academy, focusing on teacher development and student empowerment. As the first Global Culture Manager at Nova Pioneer, she facilitated cultural integration across their schools in South Africa and Kenya. Currently, as Deputy Head at St Stithians Girls' College, she oversees student affairs and wellbeing, advocating for learners belonging and engagement. She remains active in girls' education spaces, while pursuing a master's degree program on Maths Anxiety in girls.

Mr. Rakubu Wilson Sokana A Mathematics Teacher

Mr. Rakubu Wilson Sokana is a highly esteemed educator and Learning Areas Head for Mathematics and Economics at St Mary's DSG Pretoria, boasting over a decade of experience in teacher development for Mathematics Educators through SAMSTIP. His educational journey began with a BSc in Mathematics and Decision Science from UNISA, followed by a BCom (Honours) specializing in Stochastic Models, Forecasting, and Financial Modelling, indicating his profound interest in the intersection of mathematics and finance. He furthered his academic qualifications with a PGCE Senior Phase and Further Education Training from the University of Johannesburg, graduating cum laude. Rakubu's commitment to innovative teaching methods is evident through his certification in the Harkness Method from the renowned Phillips Exeter Academy in New Hampshire, USA. Additionally, he holds a Postgraduate Diploma in Business Administration from the Graduate School of Business Leadership (SBL), highlighting his dedication to professional development and a comprehensive approach to education. Outside the classroom, Rakubu has significantly contributed to educational broadcasting as a TV Presenter for Mindset Learn and Open Channel, demonstrating his ability to effectively communicate mathematical concepts to a wider audience. Presently, he serves as the Grade 12 IEB Mathematics Examiner from 2024 to 2026 and is recognized as a distinguished guest speaker for the AMESA conference. Mr Rakubu Wilson Sokana's diverse qualifications, extensive experience in education, and innovative teaching methods position him as a valuable asset to the field of mathematics education, exemplifying academic excellence and leadership.

PANEL DISCUSSIONS

Professor Percy Sepeng
Chair of Panel 1

Percy Sepeng is the AMESA 2024 Congress Director. He is a Full Professor of Mathematics Education and currently a Dean of Students at the University of KwaZulu Natal (UKZN). Sepeng has been a member of AMESA for over two decades. As the Chair of the first panel discussion, he will facilitates discussionson the rich history of AMESA, highlighting its growth, notable successes, and the challenges it has faced over the past three decades. Panelists will explore how AMESA has evolved, the impact it has had on mathematics education, and the lessons learned along the way. Additionally, they will discuss the future direction of AMESA, envisioning how it can continue to advance and support mathematics education in South Africa. This discussion promises to be both reflective and forward-looking, celebrating our past while strategically planning for the future.

PANEL Discussion 1: In the light of the 31st anniversary of AMESA, this panel discussion examines the history of AMESA: its growth, successes and challenges, as well as the future under the title: **"*The role of AMESA in South Africa"***

Panelists include former Presidents, who cover different aspects:

- Elsbeth Khembo: The collaboration of DBE and AMESA
- Vasuthavan Govender: AMESA's knowledge generation through its review of Grade 12 mathematics examinations; its phase committees and Special Interest Groups (SIGs)
- Busi Goba: AMESA's role in teacher development
- Rajen Govender: AMESA publications and academic development/writing
- Batseba Mofolo-Mbokane: Future of AMESA

Dr Dimpho Mothibi
Chair of Panel 2

Dimpho Mothibi is a distinguished academic with an excellent background in Applied Mathematics. She currently serves as a senior lecturer and acting head of department at **Sol Plaatje University**. She is at the forefront of educational innovation, seamlessly integrating technology into teaching and learning. She chairs our second panel discussion:

PANEL Discussion 2: In our second panel discussion we unpack the theme of Congress 2024 with four of our plenary speakers: Each panel member covers different aspects of the theme:

The title of this panel discussion is:

"The impact of Digital space on teaching and learning mathematics"

Panel members are:

- Allyson Rogan-Klyve
- Qinqiong Zhang
- TC Nkosi-Mnanzana
- Rakubu Wilson Sokana

AGM AGENDA

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AGENDA OF THE 29th AGM: 18 June 2024

Venue: Central Campus, Kimberley Northern Cape

1. Welcome
2. Finalizing the agenda
3. Apologies
4. Minutes of 2023 AGM: Pilane Kgomotso
5. National Council Report on activities of the association: Pilane Kgomotso
6. Report from council regarding missing funds, as requested by 2023 AGM
7. Financial report and budget: Oniccah Thibodi
8. President Report: Batseba Mofolo-Mbokane
9. Motions
10. Elections

Office	Name	Nominated by
President	1. Batseba Mofolo-Mbokane	1. Gauteng region 2. Phillip Dikgomo & Azifafaneli Ndou 3. Audrey Maboe & Frans Matsena
	2. Nkensani Duba	1. Limpopo region 2. Percilia Mogomotsi & Onnicah Thibodi 3. Mpumalanga region
Vice - President	1. Zingisiwa Mybert Monica Jojo	1. Gauteng Region
Treasurer	1. Oniccah Thibodi	1. Northwest region 2. Limpopo region
	2. Ishaak Cassim	1. Gauteng Region
Secretary	1. Diapo Makhubela	1. Mpumalanga region 2. Northwest region 3. Limpopo region 4. Gauteng Region
	2. Audrey Maboe	1. Frans Matsena & Mothibedi S.E

11. General: President
12. Closure: President

General Information

Registration venue: William Pescod: WP 5

Memorabilia Collection Room: .

Membership desk and Information desk: William Pescod: WP 17

Presenters support room: William Pescod: WP 17

Name tags

Tea and meals

Tea and Lunch will be served as indicated on the program.

Cell phones

Please switch off your cell phone during sessions.

Punctuality and venue limits

Please be punctual for all session. Note that workshop venues can accommodate only 30−35 participants – please understand that when capacity is reached, sessions chairs and student assistants will not allow more people to enter.

Computer sessions

Photocopy facilities

.

General Information …

Congress memorabilia

Evening social functions

Emergency numbers
On campus emergency numbers

Off-campus emergency numbers

Other numbers

Mr. Delivery 087 362 7400

Registration

Sunday 16 June 2024

10:00-17:00 Registration Venue: WP 5 (William Pescod)

Academic Programme

Sunday 16 June 2024: Pre-Congress Workshop

The South African Mathematics Foundation (SAMF) 14:00-17:00

Venue: Natural Science Building: Audi 1 (001)

LEGENDS

Audience					Presentation types	
FP	**IP**	**SP**	**FET**	**MTE**	**LP**	Long Paper (1 hour)
					SP	Short Paper (30 min.)
					HIT	How I teach (30 min.)
Venues (with its capacity)					**WS 1**	Workshop (1 hour)
BUILDING		**ROOM**			**WS 2**	Workshop (2 hours)
Tent		Marquee			**MM**	Maths Market
Natural Science		Audi 1 (001): 320			**DPS**	Discussion with plenary speaker
Natural Science		Audi 2 (006): 320			**DPP**	Discussion with plenary panel
Natural Science		Audi (005): 320			**SIG**	Special interest group
Natural Science		Class 1 (102): 80			**PST**	Poster (30 min.)
Natural Science		Class 2 (103): 80				
Natural Science		Class 3 (104): 80				
Natural Science		Class 4 (105): 80				
Natural Science		Lecture hall 1 (003):160				
Natural Science		Lecture hall 2 (004):160				
Humanities		Audi 1 (Hum): 144				
Humanities		Audi 2 (Hum): 146				
Humanities		Audi 3 (Hum): 252				

Monday 17 June 2024

8:00 – 9:45	**Registration**	WP 5 (William Pescod)
8:30 – 9:30	**Tea**	**Exhibition centre**
10:00– 11:30 (seated by 09:45)	**Opening Ceremony**	**Marquee**

Opening ceremony 10:00-11:30

(all to be seated by 09:45)

Venue: Marquee

Plenary 1 11:30-12:30

Dimpho Mothibi: **Ensuring Inclusive Learning Opportunities in the Digital Space: Digital Mathematics for All**

Chair: Batseba Mofolo-Mbokane

Venue: Marquee

Lunch 12:30-14:00

Moroka Square

Parallel session 1 14:00-16:00

Audience					Type	Presentation	Venue	Time
FP	IP	SP	FET	MTE				
		X	X	X	LP	Grade 11 Teachers' Perceptions on the use of Mathematical Modelling in Teaching Linear Functions to Promote Learner Engagement and Achievement: **G. Kuona, R. Ngoako & F. Machaba**	Classroom 1 (102)	14:00 – 15:00
		X	X	X	LP	Helping Mathematics Teachers develop through an adapted Professional Learning Community Approach: the case of 1+9 model in Limpopo: **P.D Dikgomo and R.M Galan**	Aud A	14:00 – 15:00

Audience					Type	Presentation	Venue	Time
	X				LP	An Analysis of Grade 4 Mathematics Teachers' Challenges in Solving Problems Involving Time: Implications for Teaching: **Vuyani and C Chikiwa**	T022	14:00 – 15:00
X	X				LP	Using Indigenous Knowledge to engage Learners in Meaningful Mathematical Exploration and Discovery in Primary Schools: **Zoleka Gula and Z. Jojo**	Audi 3 (Hum)	15:05 – 16:05
				X	WS 2	Level 4 questions in FET Mathematics: **Jenny Campbell and Susan Carletti**	T310	14:00 – 16:00
				X	MM	The Benefit and Importance of Further Maths: **Jenny Campbell and Susan Carletti**	Audi 1 (HUM)	14:00 – 16:00
X	X	X	X	X	DPS	Discussion with Plenary speaker: **Dimpho Mothibi**	Audi 1 (001)	15:05 – 16:05
		X	X		MM	Cambridge Math Market**: Nomsa Mhlongo & Sihle Zuma**	Lecture hall 1 (003)	15:05 – 16:05
	X	X	X		LP	Modelling a digital Maths Classroom: **Palesa Tsuebeane & Garikayi & Matimbe**	T023	15:05 – 16:05
X					MM	A paradigm shift for Maths in the Foundation Phase: **Karen Julies & Reinette Lombard**	T125	15:05 – 16:05
		X			MM	The Sharp EL-W535SA in the Senior Phase Maths Classroom: **Tal Moore & Andrew Naude**	T126	15:05 – 16:05

Tea: C5 Exhibition Centre 16:05-16:30

AMESA Regional meetings 16:30-17:30

Region	Venue
North-West	Audi 1 (001)
Limpopo	Audi 2 (006)
Free State	Audi (C005)
Gauteng	Lecture hall 1 (003)
Western Cape	Lecture Hall 2 (004)
Northern Cape	Classroom 1 (102)
KwaZulu natal	Classroom 2(103)
Eastern Cape	Classroom 3 (104)
Mpumalanga	Classroom 4(105)

Welcome Function 18:00

Venue: Marquee

Tuesday 18 June 2024

Plenary 2 08:30-09:30

Allyson Rogan-Klyve: **Project-based learning: A promising pedagogy for the digital age**

Chair: Percy Sepeng

Venue: Marquee

Tea 09:35-10:00

Venue: Exhibition centre

Plenary Discussion Panel 2 10:00-12:00

Plenary panel discussion on the theme: Reimagining Mathematics in a Digital Space

Convened by Dimpho Mothibi

With participants: Allyson Rogan-Klyve, Qinqiong Zhang, Eunice Gogo Mphako-Banda, TC Nkosi-Mnanzana andu Rakubu Wilson Sokana

Venue: Marquee

Lunch 12:05-13:00

Moroka Square

Parallel session 2 13:10-14:10

Audience					Type	Presentation	Venue	Time
FP	IP	SP	FET	MTE				
		X	X	X	LP	Personal experiences and reflections of using online platforms for teaching and learning mathematics in South Africa: **VG Govender**	T023	13:10 – 14:10
X					LP	Investigating the meaning of the equal sign in grade 1 DBE mathematics workbooks: **Mazeka, Ngcobo, Porteus and Roberts**	Audi 1 (HUM)	13:10-14:10

Audience					Type	Presentation	Venue	Time
			X	X	LP	The Effectiveness of Laptops on TVET Level 4 Students' Performance in Solving Complex Numbers: **N. Rakhudu & Z. Jojo**	T125	13:10 – 14:10
				X	LP	Bridging the School-to-University Transition Gap in Mathematics: Challenges and Strategies at University: **F. George and E. Rzyankina**.	T126	13:10 – 14:10
X	X	X	X	X	DPS	Pre-discussion with plenary speaker**: Cordelia Thobile Nkosi-Mnanzana** (plenary on Friday 21 June)	T004 Aud A	13:10 – 14:10
X					MM	Foundation Mathematics with Maskew Miller Learning: **The Maskew Miller team**	T005 Aud B	13:10 – 14:10
				X	SP	Exploring Grade 12 mathematical literacy learners' understanding of authentic activities**: Wisani Hlangwani**	T310	13:10 – 13:40
		X	X		WS1	DateWiz. Transforming learners' motivation for mental maths: **HA Osirio Lara**	Classroom 3 (104)	13:40 – 14:10
		X			WS 1	Exploring Geometry with or without technology: **Jenny Campbell & Susan Carletti**	Classroom 4(105)	13:10 – 14:10
X					WS 1	The Number Concept Evolution from Natural to Real Numbers: **C.N Msipha & F. George**	Classroom 1 (102)	13:10 – 14:10
	X	X			WS1	Hands On activities with Decimals: **Mphakiseng Twala**	T022	13:10- 14:10
		X	X	X	WS1	Winning, Loosing and Growing: Encouraging Growth Mindset Through Problem Solving: **Neil Eddy**	T232	13:10- 14:10
X					WS1	Play Maths Grade 1: **Colleen Urquhart, Sonja Titus, Sade Hugo, Esmeralda Ayton, Mikayla Esbie, Keesha Rhoda, Wahida Labani.**	T023	13:10- 14:10
	X				MM	The Sharp S25 in the Intermediate Phase Maths Classroom: **Tal Moore & Andrew Naude**	Classroom 2(103)	13:10 – 14:10

Plenary 3 14:30-15:30

Rakubu Wilson Sokana: Mathematics Education and the Harkness method: Enhancing learning through technology

Chair: Vasuthavan Govender

Venue: Marquee

Tea 15:30-16:00

Venue: Exhibition Centre

AMESA Annual General Meeting 16:00-17:45

Venue: Marquee

Cultural evening 18:45-21:45

Venue: Marque

Wednesday 19 June 2024

Parallel session 3 08:30-10:30

Audience					Type	Presentation	Venue	Time
FP	IP	SP	FET	MTE				
			X	X	DPS	Discussion with plenary speaker: **Allyson Rogan-Klyve**	T232	8:30 – 9:30
		X	X	X	LP	Foundational knowledge for Grade 12 Algebra assessment: **VG Govender**	T022	8:30 – 9:30
			X	X	LP	Classroom design intervention strategies to improve Grade 10 learners' comprehension of similar triangles: **G Pule**	T023	8:30 – 9:30
			X		MM	FET Mathematics with Maskew Miller Learning: **The Maskew Miller Team**	Classroom 1 (102)	8:30 – 9:30
				X	WS 2	NBTs: A motivated teacher's secret weapon & a co-operative learner's golden opportunity: **Jenny Campbell and Susan Carletti**	Classroom 2 (103)	8:30 – 10:30
X	X	X	X	X	WS1	Key Competency-oriented Mathematics Curriculum Standard in China: Rational, Framework and Practice: **Qinqiong Zhang**	Classroom 2 (103)	09:30-10:30
X					WS1	Play Maths Grade 2: **Colleen Urquhart Rushanaah Barry, Tasneem Fiyani, Phillip Brouers, Franklin Fillis, Geraldine Klein, and Chanell Kok.**	T004 (Aud A)	08:30-09:30
	X	X			WS1	A direct correlation between the level of understanding of Algebraic fundamentals and fluency skills: **W.Z Sithole, and A.G. Ncayiyang**	T004 (Aud A)	09:30-10:30
		X			WS1	Some High Yield Routine for Senior Phase Maths Classrooms**:** **S. Sjula and G. Mvubu**	Lecturer Hall 1 (003)	08:30-09:30
X	X				WS1	Measurement in 1-, 2- and 3-Dimension: **Kaashief Hassan and Yusuf Johnson**	Lecture hall 1 (003)	09:30-10:30
	X	X			WS1	Let's Talk about the teaching of Fractions: **A. Nzimande, Fadzi Mathanhike, T. Munyai**	Audi 2(006)	09:30-10:30
X					WS1	The Equal sign: it's meaning and use in early grade mathematics in both English and isixhosa: **Nobuntu Mazeka and Qhama Ngcobo**	Audi 2 (006)	8:30-09:30

X	X				WS1	Unpacking the bridging through ten Strategy (BTT): **C. Mathews, and H. Tshesane**	Audi 1 (001)	08:30-09:30
				X	WS2	Additive Calculation Strategies: Visiting The Tens: **L. Tembe, M Mbala and Q. Moloi**	Classroom 3 (104)	8:30 – 10:30
X	X				WS 2	Capacitating Learners for the Digital Space by developing Number Sense using Bala Wande materials: **Samantha Morrison , Lorna Sako and Ingrid Sapire**	Classroom 4 (105)	8:30 – 10:30
		X	X	X	LP	An analysis of affordances for learning probability in a commonly used Mathematical Literacy Grade 12 textbooks: **Sthembile L Magwaza & Anthony A Essien**	Classroom 4 (105)	09:30-10:30
X	X				WS1	What is Place Value**: Gary Powell**	Lecture hall 2 (004)	08:30-10:30
			X		MM	The Sharp EL-W535SA in the FET Maths Classroom: **Tal Moore & Andrew Naude**	Audi 1 (001)	9:30 – 10:30
X	X				MM	Exploring a collaborative use of Maths Manipulatives: **Palesa Tsuebeane & Garikayi & Matimbe**	T004 Aud A	9:30 – 10:30
		X	X	X	LP	Implementing an Adapted Lesson Study as an approach to improve Mathematics Teachers' Content Knowledge in Geometry of the Circle: **B Kgwadi- Motsusi and P. Sepeng**	T005 (Aud B)	9:30 – 10:30
		X	X		LP	In-Service High School Mathematics Teachers' Experiences with The Blended Teaching Approach**: L. Raxangana & Duncan Mhakure**	Audi 3 (HUM)	09:30-10:30
X	X	X	X	X	LP	Advocacy for Pedagogical Paradigm Shift in the 21st Teaching and Learning of Mathematics: **T. Sibiya; T. Mtshali; S. Ramaligela; Z. Dhlamini**	Audi 1 (005)	09:30-10:30
		X	X		LP	Reflections on the online use of concept cartoons to facilitate problem solving behaviour and conceptual understanding of grade 7 mathematics learners. **Clyde Felix**	Lecturer Hall 1(003)	09:30-10:30
		X	X		LP	Data-Insights into the Challenges Faced by Teachers Teaching Euclidean Geometry Through Integrated ICT Software: **M. Mosia**	Classroom 1 (102)	9:30 – 10:30

Audience					Type	Presentation	Venue	Time
			X	X	LP	Unpacking NC(V) Level 2 TVET College Students' Perceptions on the Sources of Their Mathematics Difficulties: **Mbazima Amos, Ngoveni**	T022	9:30 – 10:30
X	X	X	X		MM	Matific: Using AI and gamification to make maths accessible to all: **Natalia Kavalenia**	T023	9:30 – 10:30
		X	X		MM	CASIO 4U: **Astrid Scheiber and Lindie Roux**	Audi 2 (006)	9:30 – 10:30

Tea: C5 Exhibition Centre 10:30-11:00

Parallel session 4 11:00-12:00

Audience					Type	Presentation	Venue	Time
FP	IP	SP	FET	MTE				
	X				LP	An Analysis of Grade 4 Mathematics Teachers' Challenges in solving problems related to time: Implications for Teaching: **Niranjan and Kodisang.**	Lecture hall 1 (003)	11:00 – 12:00
	X	X	X		LP	Perceptions Of Mathematics Teachers on Developing TPACK Through Lesson Planning Integrating Technology in Oshana Region, Namibia: **M.Angula, M. Matabane and C. Simuja**	Lecture hall 2 (004)	11:00 – 12:00
X	X	X	X	X	DPS	Discussion with plenary speaker: **Rakubu Wilson Sokana**	Audi 3 (Hum)	11:00 – 12:00
X					MM	A paradigm shift for Maths in the Foundation Phase: **Karen Julies & Reinette Lombard**	Audi 1 (005)	11:00 – 12:00
X	X	X			LP	Integrating Literature in Teaching Fractions: A Qualitative Study of Grade 7 Mathematics Teachers in South Africa: **M. T. Machekane and P. Sepeng**	T004 (Aud A)	11:00 – 12:00
	X	X			MM	Coding and Robotics: Preparing yourself to teach STEM-based curriculum in the classroom: **Yolyn Jacobs**	T232	11:00 – 12:00
		X	X		LP	Investigating The Teaching Of Quadratic Functions In A Digital Space: A Case For A Blended Approach: **W Hlangwani and D Mhakure**	T005 (Aud B)	11:00 – 12:00
	X	X		X	WS 1	The Benefit and Importance of Further Studies Maths: **Jenny Campbell and Susan Carletti**	T022	11:00 – 12:00

Audience					Type	Presentation	Venue	Time
X					WS1	Play Maths Grade 2- **Colleen Urquhart, Denise Schemel, Bendrie Flanagan, Thabang Dlamini, Lucashes Jafta, Mizaen Siff & Angella Moitsi**	Classroom 1 (102)	11:00-12:00
	X	X			WS1	Hands On Activities with Decimals: **Manage Juliet Lehungwane and Mr Mafaleng Mokoena**	Classroom 3 (104)	11:00-12:00
	X	X	X		WS1	Decomposing Combinations to Develop Computational Thinking**: H. Tshesane**	Classroom 4 (105)	11:00-12:00
				X	WS 1	Problem solving in the senior phase with a special focus on Grade 7: **Jenny Campbell and Susan Carletti**	T022	11:00 – 12:00
		X			LP	Factors That Contribute Towards the Exclusion Of Mathematics Problem-Solving Tasks: **N.M Bhekiswayo & M Moleko**	T023	11:00 – 12:00
		X	X		MM	CASIO 4U: **Astrid Scheiber and Lindie Roux**	Audi 2 (006)	11:00 – 12:00
			X		MM	The Sharp EL-W535SA in the Mathematical Literacy Classroom: **Tal Moore & Andrew Naude**	Audi 3 (HUM)	11:00 – 12:00

Plenary 4 12:15-13:15

Qinqiong Zhang: Key-competency Oriented New Mathematics Curriculum in China: Rationale, Changes and Teaching

Chair: Phillip Dikgomo

Venue: Marquee

Packed Lunch 13:00 – 13:15

Your packed lunch will be served (TBA)

Depart for Excursions 13:15

Thursday 20 June 2024

Plenary Panel Discussion 1 08:30-10:30

~~**Plenary panel discussion: The history of AMESA: Its growth, successes and challenges.**~~

~~**Convened by Percy Sepeng**~~ **AMESA Annual General Meeting continued**

~~**With participants: Elspeth Khembo, Vasuthavan Govender, Busisiwe Goba, Rajendran Govender and Batseba Mofolo-Mbokane**~~

Venue: Marquee

Tea 10:30-11:00

Venue: Moroka Square

Plenary 5 11:00-12:00

Eunice Mphako-Banda: Is Abstract Mathematics abstract?

Chair: Mogalatjane Matabane

Venue: Marquee

Lunch 12:05-13:00

Venue: Moraka Square

Phase committee meetings 13:10-14:10

Phase	Chair	Venue
Foundation Phase	Patricia Walaza	Natural Science Building Audi 1 (001)
Intermediate Phase	Kgomotso Pilane	Natural Science Building Audi 2 (006)
Senior Phase	Mzakwe Sokutu	Natural Science Building Audi (005)
FET Mathematics	Diapo Makhubela	Natural Science Building (002)
FET Technical Mathematics (and TVET Mathematics)	Ishaak Cassim	Natural Science Building (003)
Mathematical Literacy	Bronwyn Adonis_Maarman	Natural Science Building (004)
Maths Teacher Education	Gabriel Mputhi	Natural Science Building (005)

Parallel session 5 14:15-16:15

Audience					Type	Presentation	Venue	Time
	X	X	X		MM	Mathematics in the Digital Era: Navigating New Horizons: **Frances Watson**	Lecture hall (003)	14:15-15:15
			X		WS 1	Capacitating learners for the digital space by developing number sense using the Bala Wande materials: **Samantha, Vuyokazi, Lorna, Thobeka and Ingrid.**	Lecture hall 2 (004)	14:15-15:15
	X	X	X	X	LP	Adapting Mathematics Teaching to Artificial Intelligence (AI): Insights from Namibian Teachers: **T. Jones, C. Simuja and M. Matabane**	Audi 1 (001)	14:15-15:15
X	X	X	X	X	DPS	Discussion with plenary speaker**:** **Qinqiong Zhang**	Audi3 (HUM)	14:15-15:15
X					LP	Using Indigenous Knowledge to engage Learners in Meaningful Mathematical Exploration and Discovery in Primary Schools: **Zoleka Gula and Z. JoJo**	Lecture hall (003)	15:20-16:20
	X	X		X	LP	Teaching Geometry Using Ethnomathematics Pedagogical Approaches: **R. Govender & Hamidu Ibrahim Bukari**	T022	13:10 – 14:10
					LP	Moving beyond counting in ones: the case for number lines: **Roberts & Porteus**	Audi 1 (001)	15:20-16:20
			X		LP	Grade 11 Teachers' Perceptions on The Use of Mathematical Modelling In Teaching Linear Functions to Promote Learner Engagement and Achievement**: Rosina Ngoako and France Machaba**	Lecture hall 2 (004)	15:20-16:20
X					MM	Reimaging problem solving strategies for Foundation Phase Mathematics **Yolyn Jacobs**	Audi 1 (001)	15:20-16:20
				X	SP	Using concrete-pictorial abstract approach to enhance Grade 11 learners' understanding on nature of roots of quadratic equations: **Prenisure Ramoroka**	T022	14:15 – 14:45
			X	X	SP	Misconceptions among Grade 12 students when learning differentiation rules: **George Fasinu**	T023	14:45 – 15:15
				X	SP	Lecturers' experiences of the use of technology in mathematics teaching at a TVET college: **Hlengiwe Mhlungu**	T125	15:20 – 15:50
			X		SP	Assessment for early diagnostics with computer adaptive technology: **Tatiana Sango**	T126	15:50 – 16:20

Audience					Type	Presentation	Venue	Time
X	X				WS 2	Capacitating Learners for the Digital Space by developing Number Sense using Bala Wande materials: **Samantha Morrison , Lorna Sako and Ingrid Sapire (Repeat)***	Audi 2 (006)	14:15 – 16:15
			X		MM	The Sharp EL-W506 in the Technical Maths and AP Maths Classroom: **Tal Moore & Andrew Naude**	Audi 3 (C005)	14:15 – 15:15
X					MM	A paradigm shift for Maths in the Foundation Phase: **Karen Julies & Reinette Lombard**	Audi 1 (HUM)	15:20 – 16:25

Tea: C5 Exhibition Centre 16:20-16:45

Special Interest Group (SIG) meetings 16:45-17:45

SIG	Chair	Venue
Primary School Teacher Education	Gary Powell	Natural Science Building Audi 1 (001)
IKS	Neil Eddy	Natural Science Building (003)
Academic Writing	Zwelithini Dlamini	Natural Science Building (004)
Problem Solving	Vasuthavan Govender & Patrick Rasehwete	Natural Science Building Audi 2 (006)

Gala Dinner 18:30-10:00

Venue: Marquee

Friday 21 June 2024

Parallel session 6 08:30-09:30

Audience					Type	Presentation	Venue	Time
FP	IP	SP	FET	MTE				
X	X	X	X	X	DPS	Discussion with plenary speaker: **Eunice Mphako-Banda**	T022	8:30 – 9:30
		X		X	MM	The Sharp EL-W535SA in the Senior Phase Maths Classroom (this is a repeated session): **Tal Moore & Andrew Naude**	Audi 1 (001)	8:30 – 9:30
X	X				MM	A paradigm shift for Maths in the Foundation Phase: **Karen Julies & Reinette Lombard**	T023	8:30-9:30
			X		SP	Digital Literacy Practices in School Learners: Exploring Curation and Annotation with Textbooks: **E. Rzyankina and Professor Msomi**	T125	8:30 – 9:30

Tea 09:45-10:15

Venue: Exhibition Centre

Plenary 6 10:30-11:30

Cordelia Thobile Nkosi-Mnanzana: Finding x and y using AI

Chair: Jeffrey Thomas

Venue: Marquee

Closing Ceremony 11:30-12:30

Venue: Marquee

Packed Lunch and Departure 12:30

Your packed lunch will be served in the Moroka Square

Expression of Thanks and Appreciation

We would like to express our heartfelt thanks and appreciation to our guest speakers and panel discussion members, our presenters of papers, workshops, “how I teach” sessions, and Maths Markets. We extend our gratitude to our sponsors for their support, and to Sol Plaatje University for the use of their facilities. Our deepest thanks go to the LOC members for their tireless work and the NOC for working closely with the LOC. Lastly, we thank all participants in the 2024 AMESA National Congress for your patience, kindness, and constructive engagement with both our Academic and Social Programme.

Programme Overview

Sunday 16 June: Registration

Monday 17 June	Tuesday 18 June	Wednesday 19 June	Thursday 20 June	Friday 21 June
08:00-09:45: Registration	**08:30-09:30:** Plenary 2	**08:30-10:30:** Parallel session 3	**08:30-010:30:** Plenary panel discussion 1	**08:30-09:30:** Parallel session 6
08:30-09:30: Tea	**09:35-10:00: Tea**	**10:30-11:00: Tea**	**10:30-11:00: Tea**	**09:45- 10:15: Tea**
10:00-11:30: Opening Ceremony Auditorium	**10:00-12:00:** Plenary panel discussion 2	**11:00-12:00:** Parallel session 4	**11:00-12:00:** Plenary 5	**10:30-11:30:** Plenary 6
11:30-12:30: Plenary 1		**12:15-13:15:** Plenary 4		**11:30-12:30:** Closing ceremony
12:30-14:00: Lunch	**12:05-13:00: Lunch**	**13:15: Packed lunch**	**12:05-13:00: Lunch**	**12:30: Packed lunch**
14:00-16:00: Parallel session 1	**13:10-14:10:** Parallel session 2	**13:30: Excursions**	**13:10-14:10:** Phase committee meetings	**Departure**
	14:30-15:30: Plenary 3:		**14:15-16:15:** Parallel session 5	
16:05-16:30: Tea	**15:30-16:00: Tea**		**16:20-16:45: Tea**	
16:30-17:30: AMESA Regional meetings	**16:00-17:45 AMESA AGM**		**16:45-17:45:** SIG meetings	
18:00-21:00: Welcome dinner	**18:30:** Cultural evening		**18:30:** Gala Dinner	

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