

Math-Art steams ahead

You've probably heard of STEM – the acronym for Science, Technology, Engineering and Maths – but what about STEAM? It's the Arts that put the A into the acronym, and STEAM is part of a global trend in education to encourage learners to seek creative solutions to real-world problems.

The Govan Mbeki Mathematics Development Centre (GMMDC) at Nelson Mandela University is promoting STEAM in South African classrooms, and recently held its second annual Math-Art Competition to encourage learners to recognise mathematics in the world around them.

"Through this competition, we wanted learners to discover the links between maths and art, as this will form a major part of future careers in this Fourth Industrial Revolution, where digital innovation is changing how we do things," said competition coordinator Carine Steyn.

The competition, which was launched and run in the Eastern Cape in 2018, was extended to include all provinces in 2019. It was open to learners from Grade 8 to 12, who could enter artworks in two categories – Maths in Nature or Maths in Manmade Designs.



Winner, Maths in Manmade Designs (Grade 8 and 9): Caitlin Wilde of Fish Hoek High in Cape Town for *Heritage Mandala*, depicting traditional Zulu patterns.

The artworks could incorporate any visual medium, including photography, drawing, painting, collage or mixed media, and each had to be accompanied by a written explanation, describing how it linked to maths. Some 600 entries were received from high schools across the country.

The top three entrants in each category were announced at a prize-giving at the Nelson Mandela Metropolitan Art Museum in June, and all received cash vouchers and book prizes.

Partnering with GMMDC for the 2019 competition were the Department of Basic Education (Eastern Cape), Umalusi (the Council for Quality Assurance in General and Further Education and Training), the South African Mathematics Foundation (SAMF), the Centre for the Advancement of Science and Mathematics Education (CASME), the University of the Free State, Kutlwanong Centre for Maths, Science and Technology, the Independent Schools Association of South Africa (Isasa) and Curro Schools.



The winners in the GMMDC National Math-Art competition were from schools in Johannesburg, Bloemfontein, Durban, East London, Cape Town, Paarl, Port Elizabeth and Makhanda (Grahamstown).



Top left: Winner, Maths in Nature (Grade 10 to 12): Lauren Damstra from Eunice Girls High in Bloemfontein for her artwork *Infinity*, which used the vastness of outer space to represent “the terror of things we don’t know”.

Above: Winner, Maths in Nature (Grade 8 and 9): Luke Ferreira from Redhill High in Johannesburg, for his exploration of mathematical tessellations and symmetry in his artwork *Pale Face*.

Left: Winner, Maths in Manmade Designs (Grade 10 to 12): Morgan Durrheim from Beaconhurst High in East London. Her mixed-media artwork *Hidden Mathematics* showed “many examples of applying mathematics for our own benefit” in famous ancient and modern landmarks, from the Pyramids of Giza to Disneyland’s famous castle.



Bottom left: Runner-up, Maths in Nature (Grade 10 to 12): Kara van Heerden from Framesby High in Port Elizabeth, for her artwork *The functions of a zebra*. She wrote: “Nature is filled with mathematics and the zebra’s body has always fascinated me with all its shapes and patterns. As I drew the zebra, I also noticed the mathematical functions. The Golden Ratio is also very visible in nature and I saw it in the hind part of the zebra. Mathematics sometimes seem impossible to do but as the feet of my zebra illustrate....a person must just start to unravel the problem. It then becomes easier and clearer and directs you on the right path.”

Bottom right: Runner-up, Maths in Manmade Designs (Grade 10 to 12): Sibangani Matsa from the University of Johannesburg Metropolitan Academy, who chose to draw attention to the pending extinction of rhinos through poaching in his pencil sketch of a rhino constructed out of metal, titled *Same Difference*.

