Maths boffs represent Mzansi

The South African IMO team, from left to right: Phil Labuschagne (deputy team leader), Jean Weight, Andi Qu, Juliette Roux, Kerry Porrill (holding the IMO team mascot), Kgoagelo Bopape, Emmanual Rassou and Liam Baker (team leader).

In September, six high school learners from South Africa participated in the 61st International Mathematical Olympiad (IMO). The team walked away with three bronze medals and three honourable mentions.

Bronze medals were awarded to Andi Qu (Grade 12) from St John's College in Gauteng, Kgaogelo Bopape (Grade 12) from Horizon International School in Gauteng, and Jean Weight (Grade 12) from Curro Hermanus in the Western Cape, while Kerry Porrill (Grade 11) from Cannons Creek Independent School in the Western Cape, Emmanuel Rassou (Grade 10) from South African College Schools in the Western Cape, and Juliette Roux (Grade 10) from Herschel Girls' High School in the Western Cape received honourable mentions.

"South Africa has been taking part in the IMO since 1992," says Prof. Kerstin Jordaan, the executive director at the South African Mathematics Foundation (SAMF). "Over the years, learners achieved one gold medal, nine silver medals, 46 bronze medals and 63 honourable mentions. We are very proud of the team's achievements this year, and would like to congratulate them on their successes."

The overall winning country of the 2020 IMO was China, followed by Russia and then the United States of America. South Africa finished with a ranking of 61st out of 105 participating countries. In previous years South Africa ranked 46th (2019), 62nd (2018), 60th (2017), 58th (2016) and as high as 27th in 1992, 1999 and 2000.

Each country selects a team of six learners. This year's South African team was selected based on the results of last year's South African Mathematics Olympiad (SAMO). The SAMO, including the South African team's training camps, is sponsored by Old Mutual and co-sponsored by the South African Institute of Chartered Accountants (SAICA). Old Mutual also sponsors the Pan African Mathematics Olympiad, as well as the training of mathematics teachers in partnership with the African Institute for Mathematical Sciences Schools Enrichment Centre (AIMSSEC).

Dr Liam Baker, a lecturer in mathematics at the University of Stellenbosch, participated in the IMO in 2008 and 2009, and served as team leader for this year's participants, helping them to prepare for the event. "The IMO was due to take place in St Petersburg in Russia in July. But because of the COVID-19 pandemic, it was postponed to 21 and 22 September and changed into a virtual event," he says.

Each participating country had a central exam centre that was monitored via webcams by the Olympiad hosts in Russia. The South African team gathered in Stellenbosch. On each of the two days, the team members had to individually solve three maths problems within the set time of four-and-a-half hours.

This is one of the problems the team members had to solve: "A deck of $n > 1$ cards is given. A positive integer is written on each card. The deck has the property that the arithmetic mean of the numbers on each pair of cards is also the geometric mean of the numbers on some collection of one or more cards. For which n does it follow that the numbers on the cards are all equal?"

- The rest of the maths problems from the 2020 IMO as well as previous years are available at: https://www.imo-official.org/problems.aspx

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