



# Girl Power!

Weeks of hard work on science projects paid off for female learners who bagged the biggest prizes at the Eskom Expo International Science Fair in September. Both the Top Senior and Top Junior Scientists were female, as were the winners of the Siemens Grand Prize and the four Eskom Special Awards, among others.

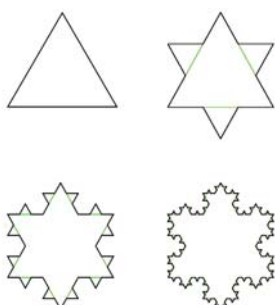
The Top Senior was Iqra Faki, a Grade 12 learner from Star College Sybrand Park Girl's High in Cape Town. Iqra won a R75 000 cash prize and was also awarded the Meiring Naudé Award for the most inspiring project. Her project, 'Fractal exploration: The 3-dimensional Koch snowflake', aimed to examine mathematical trends and noticeable properties for the surface area and volume of the three-dimensional Koch snowflake.

Interviewed by Joanne Joseph on Radio 702's Afternoon Drive show, Iqra explained her project in simple terms. "I used the principles of the Koch snowflake to create a three-dimensional version. The Koch snowflake starts off as an equilateral triangle, and then you divide the sides by three, and you add an equilateral triangle a third of that length to each side, and then it carries on," she said. "So basically what I did was instead of starting off with

an equilateral triangle, I started off with an equilateral tetrahedron, and then divided the measurements by three and added it to each face. And using that shape I proved that the surface area and volume is finite, but the perimeter and number of vertices is infinite."

The Top Junior scientist – winning R50 000 – was Abigail Bloem, a Grade 9 learner from Eunice Secondary School in Bloemfontein. Her project, 'Bright solution', aims to prevent traffic light failures with a renewable energy (wind and solar) back-up battery system, together with a fault detection system that uses Arduino coding to report faults instantly to technicians.

The Siemens Grand Prize winner was Pinky Jiyane, from Ongoye Secondary School in Kwazulu-Natal North Coast, for her project 'Ultra smart meter'. The meter allows electricity to be loaded by sending a message from a smartphone, rather than having to punch in numbers. The balance left on the meter could be checked on the phone, and alerts would be sent when units drop below 10 units. Jiyane will receive a three-and-a-half-year technical apprenticeship at Siemens in Berlin, Germany, and a job offer thereafter.



**The Koch snowflake is a fractal – a shape made of parts similar to the whole. It begins with an equilateral triangle and then replaces the middle third of every line segment with a pair of line segments that form an equilateral bump. The snowflake encloses a finite area, but has an infinite perimeter.**

Eskom's four Special Awards allowed Iqra Faki to add to her winnings, as Best Female. The Best Development award went to Maluta Gcabashe from H.P. Ngwenya Primary School in Central KwaZulu-Natal for her project 'Creating a low-dust, environmentally friendly chalk', while Miné Steenkamp from Hoërskool Douglas in Kimberley earned Best Innovation for her project 'Fighting crime with malaria-fighting drug'. Tripti Patel from Ziniaville Secondary School in Bojanala got Best Energy for her project 'Affordable warmer'.

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