

# SMALL TECH with a BIG JOB

South Africa's new nanosatellite is only as long as your desk ruler, but it can keep an eye on our whole coastline.

Engineers from the French South African Institute of Technology at the Cape Peninsula University of Technology (CPUT) have nearly finished developing their second nanosatellite, called ZACube-2. The CubeSat is 10 cm × 10 cm × 30 cm and is going through its final testing before being launched later this year.

Cargo ships and fishing and passenger vessels are required by law to share their identity and location. ZACube-2 will pick up the signals of ships sailing in South African waters. This information can be used by patrolling aircraft and vessels to keep our waters safe. It will also be used in a government project called 'Operation Phakisa', which aims to protect and develop South Africa's maritime economy.

ZACube-2 is also carrying a super-cool camera for spotting fires. The near-infrared camera has a 60-metre resolution and will be used to help firefighters to respond quickly to veld fires.

Building satellites requires clever people, and university students from the Cape Peninsula University of Technology worked with the engineers building ZACube-2, developing the skills needed to grow the space industry in South Africa.



The CPUT Space Cadets and members of the CPUT Satellite Programme with Minister of Science and Technology, Mmamoloko Kubayi-Ngubane

## National Science Week 2018 Honours Freedom Fighters

NSW celebrates the legacy of two great South African leaders with the theme, 'Deepening Democracy Through Science'.

Why did they do that and what does that mean?

President Cyril Ramaphosa declared 2018 the year to honour Nelson Rolihlahla Mandela, South Africa's first democratic president, who was born 100 years ago.

Mandela believed in building a democratic society and eradicating poverty, racism and inequality.

Albertina Sisulu was also born 100 years ago. She dedicated her life to making South Africa a better



place for women to live in. In 1956, she showed great courage when she led 20 000 women in a march to the Union Buildings in Pretoria.

This year, we should honour their legacy and work harder to build the South Africa of their dreams.

Science and technology benefit people's lives every day. For example, medical research improves healthcare, agricultural research makes sure we have enough food and innovative technology benefits South Africa's economy.

Science also opens your mind to new ideas and teaches you all about the world around you!

How will YOU honour Nelson Mandela and Albertina Sisulu? Show us by posting pictures, videos or selfies on social media using #Mandela100 #BeTheLegacy and #NSW2018.

Read about Africa's First ATM-style Pharmacy on page 10 – it's about technology that Mandela would be proud of!

National Science Week 2018 honours those who fought for a free and democratic South Africa, so we're using this edition to celebrate South Africans making a big impact through science and technology.

On page 2, read about an epic expedition to Antarctica in 2019 and new fossils found in the Eastern Cape that reveal another chapter in the story of life – right here in Africa. Learn about an exciting new anti-cancer drug being developed

and innovative technology that dispenses medicine like an ATM on page 10!

This edition will also take you on a spectacular journey into the world of mathematics. Discover how ancient Egyptians developed a clever tool to tell time on page 3, and find out about the science behind winning or losing a dice game on page 4.

On page 5, we explore why some things can float while others sink through the concept of

buoyancy and discover how mathematics is linked with the world of fashion on page 8.

We've also got two interesting interviews for you to be inspired by and the latest news from science clubs across the country.

We hope you enjoy reading – and don't forget to send us your news!

The Science Spaza Team



# Antarctic Expedition for South Africans

South African scientists are going to explore the Weddell Sea, one of the coldest and most remote locations in the world!



Researchers from the University of Cape Town (UCT), Nelson Mandela University (NMU) and the South African Environmental Observation Network are part of an international team of scientists heading to Antarctica in January 2019.

The Weddell Sea has been chosen as a Marine Protected Area and it's important to study its marine life and the impacts of climate change.

The team will include glaciologists, marine geologists, marine biologists, marine

biogeochemists, oceanographers and marine archaeologists.

This impressive group of scientists will spend 45 days on the South African ship, the SA Agulhas II – one of the largest, most modern maritime research ships in the world.

Autonomous underwater vehicles (AUVs) will also be used to explore the sea floor and search for the shipwreck of the *Endurance*.

## VOCABULARY

**Glaciologist** – a person who studies glaciers

**Marine Geologist** – a person who studies the sea floor

**Marine biologist** – a person who studies the plants and animals in the sea

**Marine Biogeochemist** – a person who studies chemical elements in the sea

**Oceanographer** – a person who studies the sea

**Marine archaeologist** – a person who studies historical objects from man left in the sea

## A four-legged fish



Two new fossil species called Devonian tetrapods have been discovered in South Africa!

## ... or a crocodile?

Dr Robert Gess of the Albany Museum in Grahamstown and Professor Per Ahlberg of Uppsala University in Sweden have discovered these two new fossils near Grahamstown in the Eastern Cape.

The fossils are of four-legged vertebrates that evolved from fish millions of years ago.

These new species have been named *Tutusius umlambo* (in honour of Archbishop Emeritus Desmond Tutu) and *Umzantsia amazana* and lived 360 million years ago!

They are Africa's oldest four-legged vertebrates and would have looked like a cross between a crocodile and a fish with a crocodile-like head, stubby legs, and a tail with a fish-like fin.

South Africa can be very proud of its incredible fossil record that increases our scientist's knowledge of global evolution.

## VOCABULARY

**Devonian** – The Devonian Period is a geological time period that occurred from 416 million to 358 million years ago

# The Story of Numbers

We use them daily in our lives, from counting change in the taxi to figuring out how many hours you can waste catching up on your favourite TV shows before studying. But have you thought where numbers come from? Numbers are very useful as they tell us the quantity of things and help us make better sense of patterns.

Credit is given to India for introducing the number zero and the decimal numbering system in 458 AD. What did other numbering systems look like? Well, the Romans had already developed their symbolic numbering by 500 BC, with numbers starting from 1.

The Indian decimal numbering system was special because counting that started from zero had big implications for mathematics. How could giving a name to nothing be so important, you may ask.

Firstly, it allowed us to create new and bigger numbers without having to use different symbols for each new power of 10. For instance, we know 508 is larger than 58 because the digit 0 (zero) indicates that there are no tens in 508 and the 5 in 508 represents the number of hundreds, whereas the 5 in 58 represents the number of tens. Moreover, the use of the digit zero opened up the world to negative numbers, and eventually decimal



fractions. More recently, the binary code used in computer programming involves only zeroes and ones, but this system can be used to represent all kinds of numbers. The impact is quite huge, right?

Did you know that there is still a society in the world that does not have words for

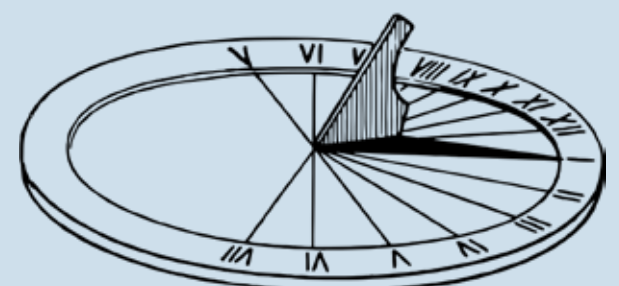
numbers? This is the Pirahã tribe who live in the Amazon region of Brazil. Researchers have discovered an interesting fact about people's ability to count or use numbers: it is a skill that needs to be taught and learned, and does not come naturally. Just think of how a young child struggles to count to 10.

## Ancient Time



Left: A huge sundial at Morehead Planetarium  
Ken Bloch, 2010

many hours had passed since the day started. A typical sundial consists of a plate (or dial) and a projecting piece called a gnomon which casts a shadow, as you can see in the illustration. The plate in the illustration is marked using Roman numerals. What time is it showing?



Above: An example of a sundial showing the time at 1 pm  
Source: Wikipedia

The sundial is thought to be the oldest scientific instrument, dating back to 1500 BC. The Egyptians have the honour of having invented this instrument. Why should we be interested in such an ancient invention? If

you had no watch to remind you of the time, how would you know what hour of the day it was?

Sundials were a simple innovation which used the sun's movement to determine how

Build your own sundial and share pictures with us on [@ScienceSpaza](#) on our Facebook and Twitter pages.



What is the likelihood that you will get all As for your next exams or that you will win the lottery? You can figure this out by understanding what mathematicians call probability – the chances that a particular event will occur.

# TAKING CHANCES

– *understanding probability*

The **theory of probability** was developed over a dice game. Two French mathematicians, Blaise Pascal and Pierre de Fermat, are credited with the development of the theory.

The story goes that Chevalier de Méré, a French nobleman (in today's terms a rich man), consulted Pascal when he did not understand why his new approach to gambling was not paying off. Initially, he would bet that he could get at least one six from four rolls of one die. He increased the challenge by making a different bet, hoping to increase his chances of winning. This time around the bet was that he would get double sixes, or a total of 12, from rolling two dice 24 times. This did not prove to be fruitful.

Pascal exchanged a series of letters with a fellow mathematician, de Fermat, to help the nobleman understand his gambling chances. They worked out that de Méré would win 51.8% of the time with his old approach and 49.1% with the new approach. In other

words, he was more likely to get at least one six from four rolls of one die. Today, the theory of probability is applied across many

different fields, including sports, insurance, medicine and economics, to name a few.

Now to answer that question about winning the lottery in South Africa. The odds of winning are one to 20 358 520. Let's put this into perspective: imagine there were Coke cans lined up end to end from Johannesburg to Harare and you had one chance to pick a can with a gold token stored inside one of them. This would be the same as your chances of winning the lottery.



# Just floating around



[http://tallshipsgothenburg2016.com/wp-content/uploads/2016/01/IMG\\_9772-1024x661.jpg/](http://tallshipsgothenburg2016.com/wp-content/uploads/2016/01/IMG_9772-1024x661.jpg/) image by TallShip 2016

**Isn't it amazing how ships manage to stay afloat, yet weigh many tonnes? The answer lies in the law of buoyancy or the principle of Archimedes, after the Greek mathematician and mechanical engineer who discovered the idea.**

Apparently, the light bulb moment came to Archimedes while he was taking a bath. You have probably experienced it as well. Have you noticed how water will sometimes overflow when you submerge yourself in a bathtub? Or how you seem to weigh less in a deep pool of water? Archimedes figured that objects either sink or float depending on the upward force exerted by the water on the object, and the weight of water displaced by the object. In other words, a ship is able to float in water because it weighs less than the weight of the water that is displaced.

Let's take a look at an example in nature that supports Archimedes' principle of buoyancy. Fish

manage to stay afloat in water through the use of a swim bladder. This is a sack inside its body which inflates and deflates, depending on the action a fish wants to take. For instance, when the sack fills up with oxygen, this increases the volume of the fish and decreases its density. This causes more water to be displaced and the fish will be pushed up, i.e. the fish is buoyant. Conversely, when the swim bladder is deflated, the volume of the fish is decreased; thus less water is displaced and the fish sinks.

Test objects of different weight in a pool of water to see which ones remain buoyant. Share your discoveries with us.

**How many times in a 24-hour day will the minute hand and hour hand of a clock be perpendicular?**



Do you find this question interesting? Then participate in our National Science Week interactive blog, which will be launched on [www.samf.ac.za](http://www.samf.ac.za) on 30th July.



By Sinobia Kenny, AIMSSEC

Mr Sibongile Siboma is a local potter. He is part of a team that manufactures and decorates products for distribution to major airports in South Africa and worldwide. During National Science Week in 2017, Mr Siboma explained the pottery production process to learners and demonstrated the precision and accuracy required for the design of the products. Mr Siboma's dream of selling his work was made possible by The Potter's Workshop in Capricorn, Cape Town. After the demonstration, the learners were given the opportunity to design a mystic rose on a plate to help them to see the relevance of natural numbers, formulae, shapes, conjectures and generalisations and patterns.

A template to design the mystic rose can be found below.



# Designing a mystic rose for a potter

Above: Rolled out clay cut into moulds

Left: The mystic rose template

**MYSTIC ROSE**

What can you see in this diagram?  
 Could you draw it? Could you draw similar diagrams with just 3, 4, 5 or 6 points around the outside? Try it!

How many lines are there in your diagrams? How many lines are there in the original diagram? Can you find a way of working out the number of lines without counting them? Explain your method.

Are the two smaller diagrams the same or different?  
 Explain your answer.



Above: Mr Sibongile Siboma, a local artist, explaining his skill to learners

Below: Learners designing a mystic rose for a plate



*This feature proudly sponsored by the Department of Science and Technology*  
[www.dst.gov.za](http://www.dst.gov.za)



Above: Patterns that can be tried at school

# Ethnomathematics *and* basket weaving

By Sinobia Kenny, AIMSSEC

Ethnomathematics is defined by the Brazilian mathematician, Ubiratan D'Ambrosio, "as intersections of culture, historical traditions, sociocultural roots and mathematics". Ethnomathematics is important to us as it helps us to express the various beautiful (South African) cultures. It confirms that our cultures and identities are very important to us, and we should respect and value our cultures on the African continent.

Mrs Victoria Ralasi, a Xhosa basket weaver, uses local Imsisi reeds, mountain grass and recycled plastic to weave baskets. When we asked her who taught her the art of weaving, she said, "No-one taught me. I taught myself." This shows how local tradition has become an integral part of who we are, and at times, we forget how the beauty of what we do in our everyday lives can be closely related to mathematics, passed from one generation to the next.

During the National Science Week in 2017, learners were shown how tangrams can be used to make designs for baskets and had a go at learning the skill of weaving. Great activities of trying different weaving patterns can be found at <http://naturalmath.com/2012/07/weaving-mathematics/>. Mrs Ralasi's work is accessible to the public through Afrika Design in Woodstock, Cape Town.



Above: Mrs Victoria Nalasi demonstrating the skill of weaving;

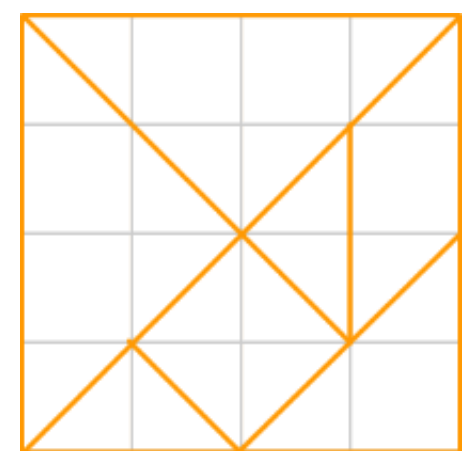
Below: Learners using tangrams to design patterns for baskets.

Photos courtesy Yasmin Hankel, AIMS South Africa Media Specialist



"We don't always think that we use mathematics in our culture because we don't read about it in books. We should value the role mathematics plays in our culture as culture defines who we are and where we come from."

The primary school learners participated in designing patterns for the baskets using tangrams (pictured below). Learners were asked to cut out the pieces that make up the tangram and design a shape. The activity stimulated the learners' competitive nature to create interesting designs for the baskets.



Secondary learners experienced the challenge of weaving using recycled card.

The resources were provided by AIMSSEC, the Schools Enrichment Centre of AIMS South Africa.

Information provided by the African Institute for Mathematical Sciences  
[www.aims.ac.za](http://www.aims.ac.za)



**AIMS**

**African Institute for  
Mathematical Sciences  
SOUTH AFRICA**



# When **Maths** meets **Fashion**

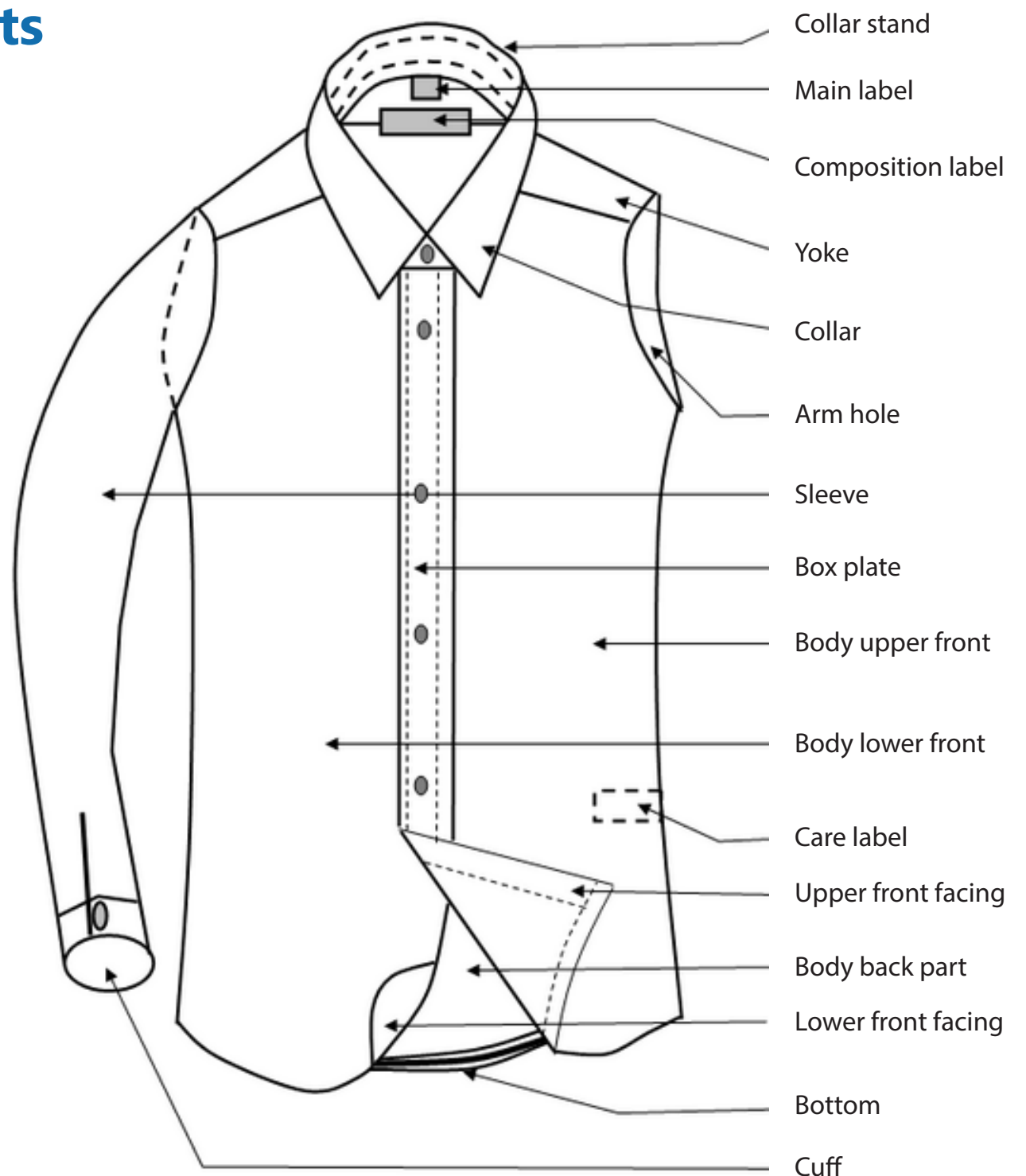
**The applications of mathematics do not end with your lessons at school. They are applied across various fields. For instance, geometry principles play a major role in the design of your clothes. Let us use the design of a basic shirt to explain how fashion designers apply geometry in their work.**

## The basic components of a shirt

You will notice from the picture that there are different elements of a shirt with specific cuts (or angles) which have been cut out and measured. For instance, the sides (or seams) of the shirt need to be equal in length in order for it to fit properly. You can think of a V collar as a  $90^\circ$  triangle. If the triangle of the V cut were acute, meaning the angles in the triangle were less than  $90^\circ$ , it would not fit around the head. On the other hand, if it were obtuse, meaning one of the angles were greater than  $90^\circ$ , the shirt would not fit the shoulders properly.

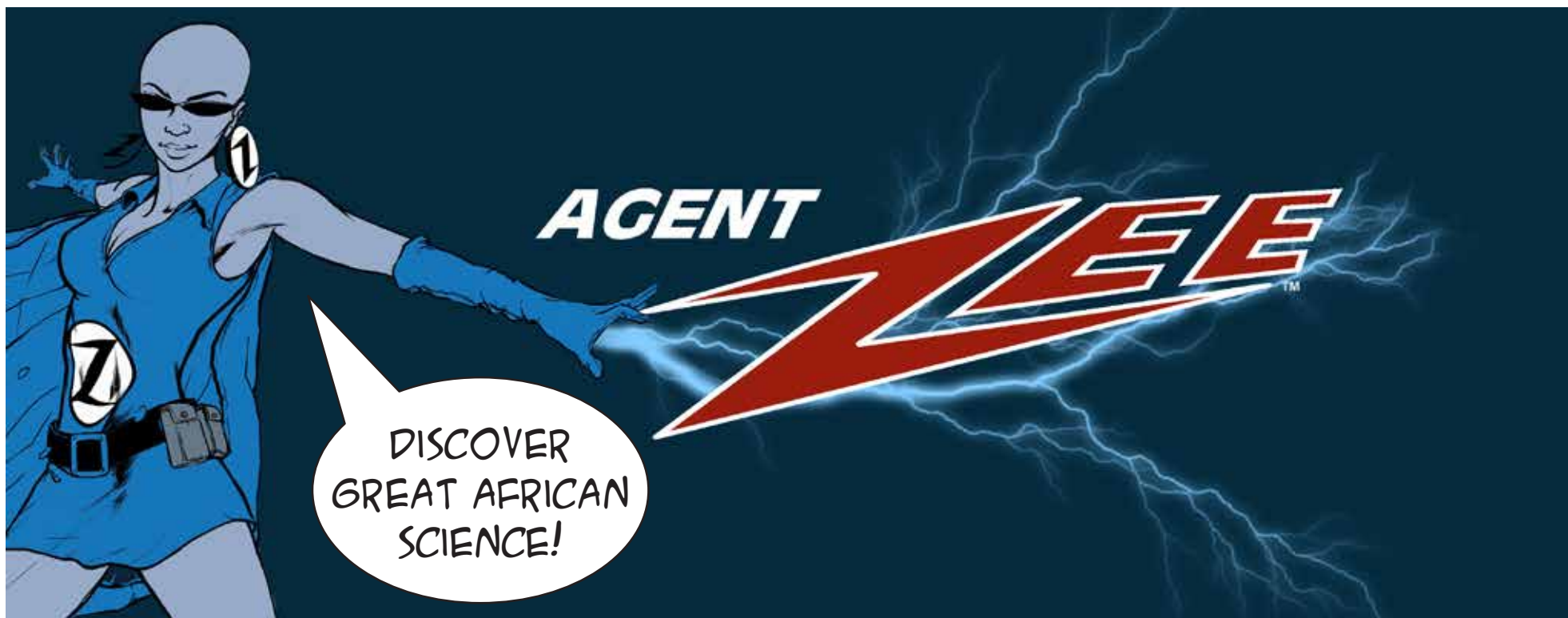
Lastly, let's talk about the sleeves of the shirt. The designer needs to correctly cut a circle of the right size. Otherwise it will fit too snugly or too loosely around the arms. In geometry terms, it means he has to measure the circumference of the circle correctly.

**Try making a simple T-shirt for yourself at home using old pillowcases, and send us pictures. We would love to see it.**



Source <http://textilelearner.blogspot.co.za/2015/07/different-components-of-basic-shirt.html>, image by Noor Ahmed Raaz, Accessed 03 August 2017





## Meet a Mathematician Profile of Ritesh Ajoodha – Associate Lecturer



**Agent Zee:** What is your home town – and how did you become interested in computer science?

**Ritesh:** Honestly, my dream was to become a mathematics teacher! I did not even consider computer science as an option! This was because my school did not offer computer courses and I had no idea how computers would continue to shape the world that we live in.

Machine learning is a field in computer science which deals with giving the computer the ability to learn without being explicitly programmed to do a task. For example, recommending music or diagnosing a patient with a disease.

**Agent Zee:** Please give a short description of your work.

**Ritesh:** I am interested in giving the computer the ability to learn how to

recognise influence between temporal data. For example, can we train a computer to recognise how composers influence each other? How poets like Shakespeare influenced J.K. Rowling's books? How traffic on one road can influence traffic on other roads?

**Agent Zee:** What kind of computer programme would you like to be and why?

**Ritesh:** I would like to be a medical diagnostic system, which is able to recognise diseases in patients. This is because so many people in South Africa are mistakably diagnosed, which leads to their condition worsening.

**Agent Zee:** Why should some school learners consider computer science as a career option?

**Ritesh:** Computers are electronic devices which can manipulate information. It is almost impossible to imagine our lives without computers in them (e.g. traffic lights, cell phones, laptops, even cars are computers, too). Computers improve our lives by giving us education (Wikipedia), exposure (the internet), entertainment (e.g. movies), and ways of performing tasks faster and more efficiently (programmes). Computers assist us with medical diagnosis, navigation, and even recommendation. Every job you can think of either already has been improved by a computing system or is yet to be improved by one!

## Science Is Important to Society

### Thousands of people took part in a march for science in Durban



On 14 April 2018, students, scientists, government officials and their friends and families made their voices heard in support of science. Their message was clear: science and technology can improve lives. Scientists in South Africa make amazing discoveries and it is important to keep improving scientific research and education.

Six organisations led the march: the University of KwaZulu-Natal (UKZN), the South African Medical Research Council (SAMRC), the South African Medical Students Association (SAMSA), the University of KwaZulu-Natal Medical Students Representative Council (MSRC), the Centre for the AIDS Programme of Research of South Africa (CAPRISA), and Global Laboratories.

"I stand for the March for Science because I strongly believe that science is a gift to humanity," said Musa Mthembu, president of SAMSA. "It knows no country, no race, gender or age, because knowledge belongs to humanity and it is the torch that illuminates the world."

**Tell us on social media why YOU think science is important.**



# Inspiring Young Scientist

**Xolani Nkunzi (20), from the Eastern Cape, started a Science Spaza club at his high school in 2014. His passion kept growing and now he's reaching for the stars!**

**Agent Zee:** Where did you go to school?

**Xolani:** Lungisa Senior Secondary School near Port Elizabeth.

**Agent Zee:** When did you start the Science Spaza club and why?

**Xolani:** I started it in 2014 when I was in grade 10. We were at a Science and Technology centre for National Science Week and someone gave me a pamphlet. I always loved science but there were not many resources for us at school, so I started the club.

It was hard to begin with. Most people think science is all about boring experiments, but Science Spaza gave the club members something they did not expect – they made it fun and interesting!

I led the club until I matriculated in 2017.

**Agent Zee:** What were your favourite subjects at school?

**Xolani:** Definitely Physics! And Maths and Life Sciences.

**Agent Zee:** Are you studying now?

**Xolani:** Yes, at Wits.

**Agent Zee:** What are you studying?

**Xolani:** I applied to do Astrophysics but the course is very limited – they only accept 30 people every year. I decided to do a Bachelor of Arts, majoring in Geography and Psychology, and I hope to move into Astrophysics from there.

**Agent Zee:** Why did you choose Geography and Psychology?

**Xolani:** I loved Geography at school and Psychology actually relates a lot to biology. There are many branches of Psychology, like Neuropsychology, that include a lot of biological and medical information. I also love to understand how people think!

**Agent Zee:** What attitude do you need to succeed in life?

**Xolani:** You need to do what you love, no matter how hard it is. Being passionate about something will drive you. Don't give up on what you love. Giving up is like failing yourself. You will only be successful doing what you love.

**Agent Zee:** If you could meet any scientist from history, who would it be and why?

**Xolani:** Galileo Galilei. He was the first person to study the pendulum clock. I like mechanics and understanding how different parts all work together.

**Agent Zee:** Who is your role model and why?

**Xolani:** The astrophysicist Neil deGrasse Tyson inspires me. Since he was young, he has loved astronomy and he didn't let anything stop him from pursuing his dreams.

The cosmologist Dr Stephen Hawking also inspires me; despite his disabilities he didn't give up on his passion.

Also, my uncle, Mr Paul Nkunzi, who raised me and shaped who I am today.



**Agent Zee:** What do you love about science?

**Xolani:** Science helps you understand the world, especially the things you can't see. For example, there are many theories and principles that explain how galaxies interact.

**Agent Zee:** The theme of National Science Week 2018 is 'Deepening Democracy Through Science'. Why do YOU think science is important for democracy?

**Xolani:** Everyone has basic needs, like housing, running water, electricity and many others. It's expensive for the government to provide this to many people. Science can help cut costs. For example, some RDP houses are now built with recycled materials that are safer and cheaper. Water filters have also been designed for people in rural areas to get clean water. Science helps the government help more people.

**Agent Zee:** What is your message to all Science Spaza members?

**Xolani:** Follow your dreams and be like Stephen Hawking – don't give up!

## PUZZLE YOUR MIND!!!

**FIND THESE WORDS IN THE GRID:**

- |              |                  |
|--------------|------------------|
| WATER        | TETRAPOD         |
| CUBESAT      | ALBERTINA        |
| MANDELA      | CENTENARY        |
| SCIENCE WEEK | SATELLITE        |
| DEMOCRACY    | VERTEBRATE       |
| ANTARCTICA   | ECOSYSTEM        |
| WEDDELL SEA  | BINARY           |
| PHARMACY     | SUNDIAL          |
| SILVER       | PROBABILITY      |
| CHEMOTHERAPY | BUOYANCY         |
| MITOCHONDRIA | MACHINE          |
| GLACIOLOGIST | ETHNOMATHEMATICS |

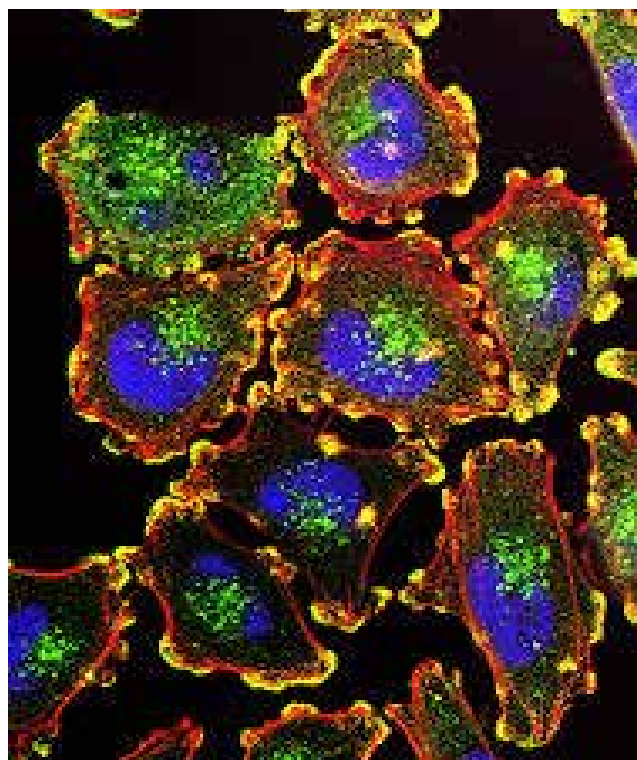
TIME FOR SOME MIND-STRETCHING FUN! ... LET'S SEE HOW MANY OF THESE WORDS YOU CAN FIND IN THE GRID.



S	C	I	E	N	C	E	W	E	E	K	O	L	G	A	L
A	H	H	T	I	V	A	D	Z	T	R	Y	A	L	N	E
W	E	M	I	T	O	C	H	O	N	D	R	I	A	T	T
E	M	G	L	J	U	Y	M	X	S	E	A	D	C	A	H
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M	P	T	U	Y	I	M	C	M	P	I	L	N	H	N	T
R	C	Y	A	S	N	D	S	W	O	V	V	C	Z	T	I
N	O	Y	T	T	A	N	W	I	D	C	E	Y	T	E	C
F	X	G	E	E	N	I	H	C	A	M	R	G	R	N	S
P	H	A	R	M	A	C	Y	H	U	Y	T	A	U	A	R
W	V	V	E	R	T	E	B	R	A	T	E	H	C	R	T
H	C	U	B	E	S	A	T	G	X	M	V	Q	Z	Y	B

# Silver Bullet for Cancer

South African researchers have discovered a new drug that fights cancer



Above: Melanoma cancer cells viewed under a microscope

Scientists in the Biochemistry department at the University of Johannesburg (UJ) have discovered a new anti-cancer drug called silver thiocyanate phosphine. That's a bit hard to say so it's been nicknamed UJ3.

It has been successfully tested on human breast cancer, esophageal cancer and melanoma (skin cancer) cells in the laboratory. The results show that it's as effective as chemotherapy in fighting cancer cells.

You also need a much lower dose of UJ3 compared to chemotherapy and it kills more cancer cells than healthy cells – which is quite important! UJ3 is much less toxic than chemotherapy and causes fewer side effects for patients. These are exciting results!

How does it do this? UJ3 turns the power off! It cleverly targets the mitochondria of the cancer cells where energy is produced. Without energy it can't grow and reproduce, and it dies.

# DON'T STOP Saving Water

The dams are filling up but we can't stop saving water yet!

The Western Cape province is still in the middle of the worst drought in 10 years and the dams are not full enough to end water restrictions. Everyone living in the Western Cape must keep up their water-saving efforts.

In fact, water is a precious resource throughout South Africa because we have large areas of dry, arid land and a growing population.

According to the World Wildlife Fund (WWF), South Africa gets an average of 490 mm of rain per year; this is only half of the world average of 814 mm per year.

Many organisations work hard to conserve water by clearing alien vegetation that sucks up a lot of water, rehabilitating wetlands and creating healthier ecosystems around rivers and streams.

You could be a water-saving hero and help reduce water pollution by picking up litter on the banks of a river.

**Did you know that maths can help predict a drought? Find out more in the Science Spaza worksheet 'Water'.**

## An ATM for Medicine

In the suburb of Alexandra in Johannesburg, patients with chronic illnesses can now get their medication from an ATM.

This specially designed technology is called a pharmacy dispensing unit (PDU).

Medical and technology experts from Right to Care and Right ePharmacy developed this innovative technology in partnership with the Gauteng Department of Health.

They hope it will help provide better healthcare in South Africa and make it easy for people to get their medication. It will also decrease long queues in clinics and hospitals.

This is how it works:

1. Patient scans his ID book, ID card or pharmacy card and enters a PIN;
2. Patient talks on video to a pharmacist;
3. The prescription items are chosen;
4. The medicine is robotically labelled and falls into the collection slot;
5. Patient takes his receipt, which also shows the next collection date.

These 5 steps only take 3 minutes!

### VOCABULARY

**Chronic illness** – a disease that lasts more than 3 months and usually cannot be cured

# NEWS FROM THE CLUBS

*This is where you, the members of the Science Spaza clubs, get to share your news and have your say about science issues.*

## Some fun with scientists at the African School of Excellence

On the 21st of July 2017, several science clubs from Gauteng got the opportunity to engage with sixty scientists from around the world and complete science-related activities. This was through the collaborative effort of Science

Spaza and the South African Young Academy of Science (SAYAS), the Academy of Science of South Africa (ASSAf) and the United Nations Major Group for Children and Youth (UNMGCY).



Above: Scientists guiding learners through a fun science activity; Below: Excitement as girls get ready to fly their paper planes



## Northriding High make their own batteries using fruit

I am Spesihle, a grade 6 girl at Northriding High. Today we made an orange battery. We saw that if we put electrodes inside the fruit a readable voltage would be noted on the multimeter. This could make an LED light glow. We saw we could take this further by testing various fruits, arranging them in series or in parallel. It was super cool. NHS is making me love science more. Science is mwaaaah! 😍



Above and below: Learners setting up a circuit to test the voltage through an orange

