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Supernova

The mag for curious kids



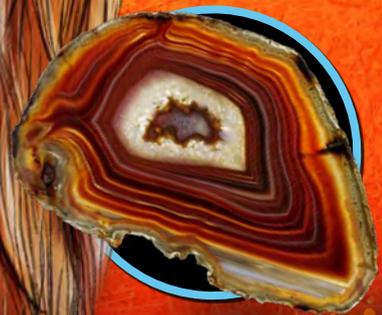
THE FIRST
PHOTO OF A
BLACK HOLE

p.8



THE ABC'S
OF DNA

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THE HISTORY OF
GEMSTONES

p.40

Lions

THE PRIDE OF AFRICA

VOL
8.4



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PUZZLES | SCIENCE | NATURE | ACTIVITIES | SPORTS | COMICS

RECYCLING INTO THE FUTURE

1



I will recycle more plastics like cold drink bottles.

2



I will ensure my school and community recycle.

5



I will recycle items when I no longer want them.

6



I will raise awareness about recycling.

SEVEN RECYCLING PROMISES TO BECOME A GLOBAL RECYCLING CITIZEN

3



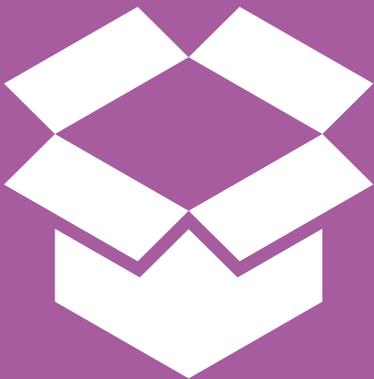
I will make sure that my recycling is clean and in the right bins.

4



I will repair and reuse the things I own.

7



I will recycle all my new packaging.

+



I will do my bit this National Recycling Day 20 September 2019.

The BIG Picture



Photographer: Chris Oosthuizen,
University of Pretoria

Photo kindly supplied by
the British Ecological Society





Winning photo from the British Ecological Society Capturing Ecology competition

Stand out from the crowd on Marion Island (Prince Edward Islands).

This image shows an adult king penguin surrounded by chicks at a large breeding colony. Populations of the species inhabiting sub-Antarctic islands face an uncertain future, as climate change threatens to shift oceanic fronts where the animals feed, pushing them further away from breeding sites.



supernova

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Hi SuperKids

What does it mean to be a leader? For one, it means you make difficult decisions where other's can't. You do what's right and you act in a way that's best for all. It's not easy being a leader, but every one of us can be a leader in his or her own way. You can be a leader in your classroom, in your family, in your local book club or even in your country. You can be a leader of people, or you can be a person ushering new ideas into the world. Either way, you always aim to make the world a better place.

The Shorts

20



Flags of the World Part 2

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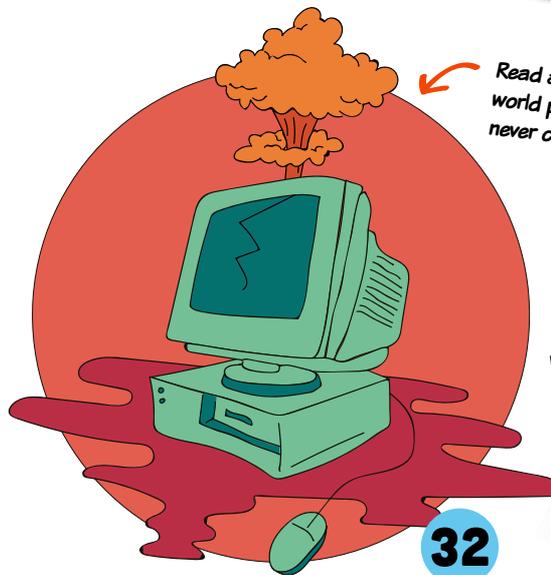
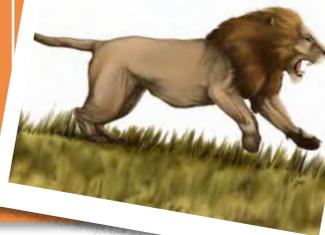
The Next Thing in Gaming

In this issue, try and guess the nation behind each flag (p.20) and see the technologies leading the way into the future of video gaming (p.22).

Lions

Find out about the king of the jungle in Ant's Eco Adventures. See all there is to this majestic and fearsome predator at the top of the food chain.

26

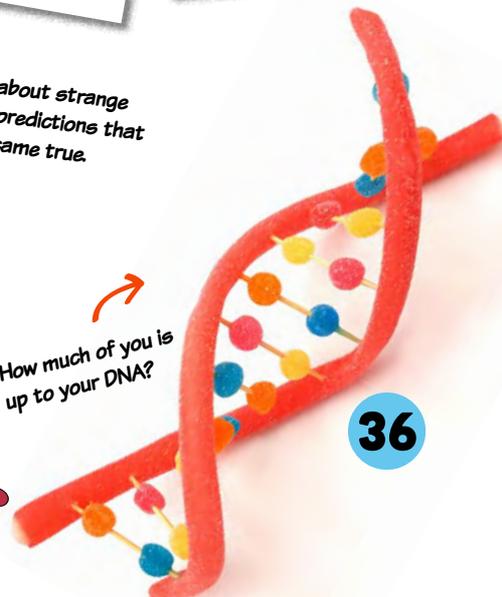


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Read about strange world predictions that never came true.

How much of you is up to your DNA?

36



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By you. For you.



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Dig into the world of gems.



40

Some people have made some truly strange predictions, which thankfully have never come true. (p.32)

DNA is the building block of all life. It really sparks the debate of what makes you who you are. (p.36)

Dig into the soil of the earth and you'll be amazed by the variety of gem stones. (p.40)

sn



To be continued...

By BeJait



Thank you so much to everyone who sent us competition entries! You guys are some seriously talented artists!



How to Train Your Dragon competition winners

The competition winners were selected by random draw. Congratulations to the three lucky winners and kudos to all who entered! Here is a small selection of some of the entries.



Maria Anspach



Katelyn Holton



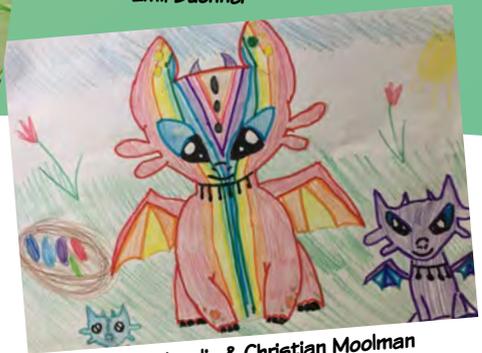
Emil Büchner



Anya Quinn



Julia and Jessica Hewitt



Amelie & Christian Moolman



Congratulations to our 104-Storey Treehouse hamper winners! Thanks for sending us these awesome pics!



Phoenix



Yusuf



Thomas



Kierha and Damien



What ancient artifact could this possibly be? Find out in the next issue of *Supernova*.

Amazing Animals

Dumbo Octopus

Say hello to the Dumbo octopus! Yes, you guessed right, this strange looking creature is named after Disney's famous flying elephant that has strangely enormous ears, something they seem to have in common. Unlike other octopuses, these guys use their ear-like fins to propel themselves forwards while their tentacles help them to steer. Also known to be the deepest-living genus, the Dumbo octopus is a rare find and almost never encounters predators or is threatened by humans, making them true creatures of the deep!



What in the World?



Close-up photographs by Pyanek



Ask Jules?

Elné (10) asked us:

Why do chameleons change colour?

Chameleons change their colour to communicate their mood. When angry, they usually appear darker than when they are calm. Their colour also changes according to the temperature of their environment. When cold, chameleons try to attract sunlight by taking on a dark green colour while warmer weather means they need to cool down, and so change to a lighter green. Researchers have discovered that chameleons are able to control their colour due to a layer of pigmented cells found under their skin (called iridophores) that can reflect different wavelengths of light. That's why we can see these googly-eyed creatures in all sorts of different shades.



Can you guess what these two close-ups are of? Find the solution on page 47.

Photo Feed

THE FIRST TO GET THE PICTURE

This photograph is in fact not a photograph at all, but hundreds of pictures taken on telescopes all across the Earth and combined to make one image. This process is called interferometry.



This first ever picture of a black hole was taken by a group called the Event Horizon Telescope Project. It took a group of 200 scientists from around the globe, including scientists from Hawaii and even the South Pole, two years to put the image together.



Even though the M87 black hole is so big it's too far away to get a clear picture, 55 million light years away to be exact. It would be like trying to take a photo with your phone of your pet from 100m away and then zooming in.



A black hole does not let any light escape and the only light to be seen is around the outside.

THE FIRST PHOTO OF A BLACK HOLE

Turns out Einstein was right! Black holes do exist. A black hole isn't really a hole in space, but it does have so much mass that it exerts a huge gravitational pull that nothing, not even light, can escape. Until now, we've only had renderings or illustrations of what they look like. This supermassive black hole, M87 (sounds like a 007 agent!), is 38 billion kilometres wide and spins clockwise. Its mass is about the same as 6.5 billion of our suns, which is the same as 6500 humans compared to one ant!

FIRST AI-GENERATED PAINTING ON AUCTION

This 'painting' generated by GAN (Generative Adversarial Network) is the first AI-generated work to be sold on auction. It was created by an artificial intelligence called The Generator, which has access to 15 000 portraits painted between the 14th and the 20th century and makes AI generated images. This image raises questions about the future of creativity in humans and robots.



FIRST PHOTO POSTED ON INSTAGRAM

The first photo posted on Instagram (which was called 'Codename' at the time) was by co-owner Kevin Systrom and featured his girlfriend's foot and his dog. After that, Instagram became known as a platform for beautiful and artsy photos, rather than photos of people's pets and breakfasts. Nowadays Instagram seems to have gone back to the spirit of the first photo ever posted there!



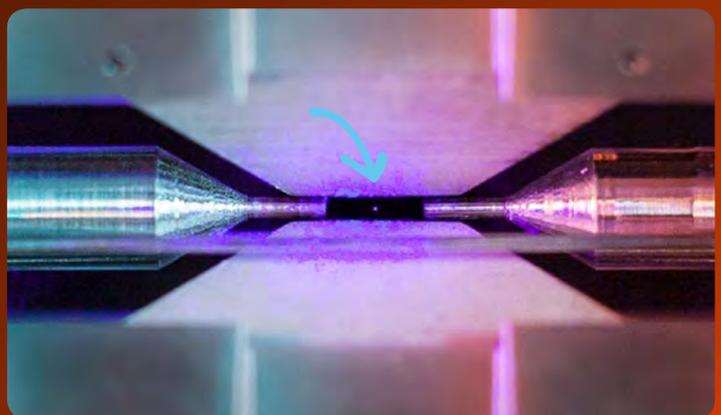
FIRST SELFIE TAKEN BY AN ANIMAL

Photographer David Slater opened a real can of worms when he set up his camera equipment in Indonesia in such a way that Celebes crested macaques could take images that look like selfies. This image was taken by an animal, which doesn't have copyright. The photo was available on Wikipedia for free. David Slater sued Wikipedia saying that the copyright belongs to him, but he lost. Later, PETA (People for the Ethical Treatment of Animals) made a legal case that a monkey *could* have copyright and that the monkey should get paid for its image. They won!



THE FIRST PHOTO OF AN ATOM

Below you can see a single strontium atom, suspended by an electrical field generated by two electrodes and illuminated by blue-violet light. Atoms normally aren't visible to the naked eye, even strontium atoms, which have 38 protons. This atom has been energised by a high-powered laser, which gives off enough light for a long exposure shot to capture the atom and give us this amazing photo. Photo by David Nadlinger.



The Electric Guitar



The most expensive guitar was made by Fender. It's called the 'Reach Out To Asia' Stratocaster and was sold for charity. It was signed by famous guitarists and reached almost R 40 million.

Every day Fender makes guitar strings long enough to drive between Cape Town and Pretoria a total of 219 times.



Do you want to be a musician? Visit our shop and talk to an expert.

There is love and there is true love. In 2001, the British musician Chris Black decided to marry his guitar.



The world's largest playable electric guitar is over 13 metres long. That's almost as long as a full-sized bus!



Ed Sheeran attracted almost 216 000 people to a single concert. Not bad for a man alone on stage with his guitar.



MUSICA INSTRUMENTS
WWW.MUSICAINSTRUMENTS.CO.ZA

Six Fountains Lifestyle Centre, Silver Lakes, Pretoria
Tel: 012 991 4930

Interviewed by Vanessa Smeets



Hi! My name is Warren Moodley. I am a personal trainer and life coach at Virgin Active in Pretoria, but I am also very passionate about body-building.

Warren is the current SA Champ for over-40-year-olds in the World Fitness Federation.

Personal Trainer

What is your profession?

I chose this profession, as I love helping others lead their best lives. I came from a family of body-builders, where looking good was about feeling good. A personal trainer helps others to reach their optimum mental and physical levels. Those who are mentally dedicated and disciplined will see a physical change. Apart from motivating people through cardio and weight-training, I also advise others on changes they need to make in their diets and lifestyles.

What do you do on a typical day?

I wake up at 3:30am, pack my meals for the day, have breakfast (oats with protein sauce or eggs) and see my first client at 5am. I train and snack between clients and will see about 15 of them a day. My day ends around 7pm.

What is it like working with clients?

Of course there can be some personality clashes with a client, but I make sure to interview everyone before allowing them to sign a contract with me. I need to enjoy what I am doing and if I'm not, then I'm honest and recommend someone else.

What qualifications do you need?

You need a Personal Training Diploma. A nutritional course is also beneficial, as the two are tied together. It's also great to know how to brand and market yourself to attract clients over social media and keep your current clients amped!

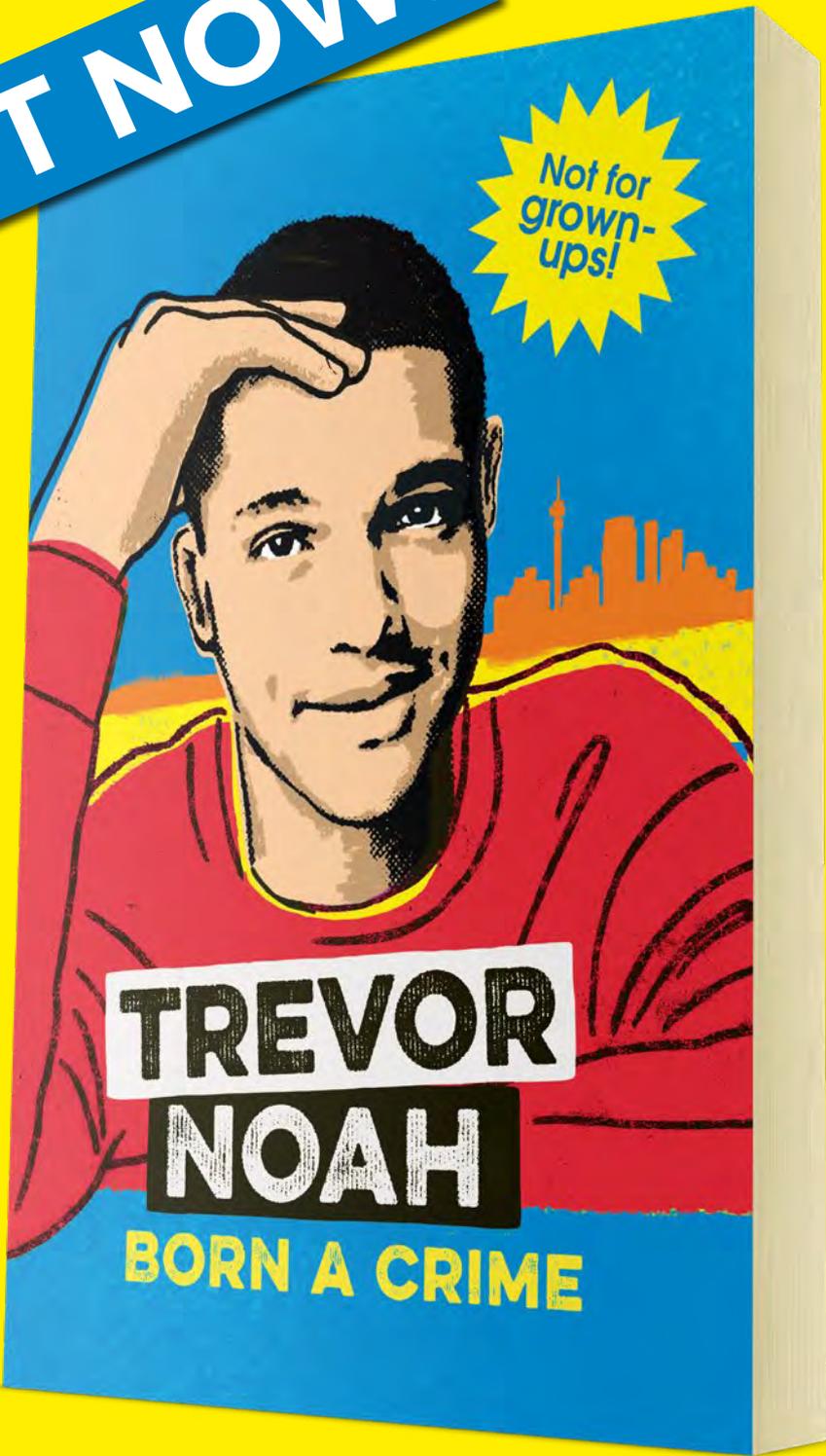
WARREN'S ADVICE...

Aspire to be greater than who you think you are and always give back. Always focus on your strengths. They'll lead the way to better confidence.



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grown-
ups!*



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 PAN MACMILLAN

In the latest edition by author Vanessa Smeets, we write in the adventure genre. Let your imagination run wild and complete the rest of this adventure.



The Circus Twins

Everyone loves to go the circus, except those who actually work at the circus.

Since they were small, twins Joy and Gloomy wanted to be famous stars. Their mother told them they had exceptional talents. At the young age of ten, their mom took them out of school to put them in the neighbourhood circus because she needed the money.

Their mother was as thin as a spaghetti strand, with a head like a round, pinkish meatball. They had not eaten properly in two weeks. Their mom lost her job because she was unable to move, after receiving a letter from her husband. The letter said:

Dear children

I was shocked when I came to the hospital and saw I had twins... I decided I was not ready to be a father, so I joined the circus in South Africa. I would like you to come visit me... I found out I had many talents and would like to know yours.

Story to complete...

Write two or more paragraphs (250 to 500 words) to complete this short story.

Send your entries to mail@kidsmag.co.za

Words by Vanessa Smeets

Illustration by Kerry Moolman

Optional extra details:

- Fearless Hero/ Heroine
- Hero/ Heroine separates from his/her old life
- Finds him/ herself
- Returns changed

Elements it should include:

- Reader is left in suspense
- Amazing journey of self-discovery

To help:

First paragraph: What do the twins decide to do? How does their mom react?

Second paragraph: What happens next? Does the father acknowledge their existence?

Next: Can you feel the sense of adventure while reading your text?



The moai statues, commonly known as the Easter Island heads, have always held great mystery. I was fortunate enough to see these enormous heads up close and learn what has been discovered about them.



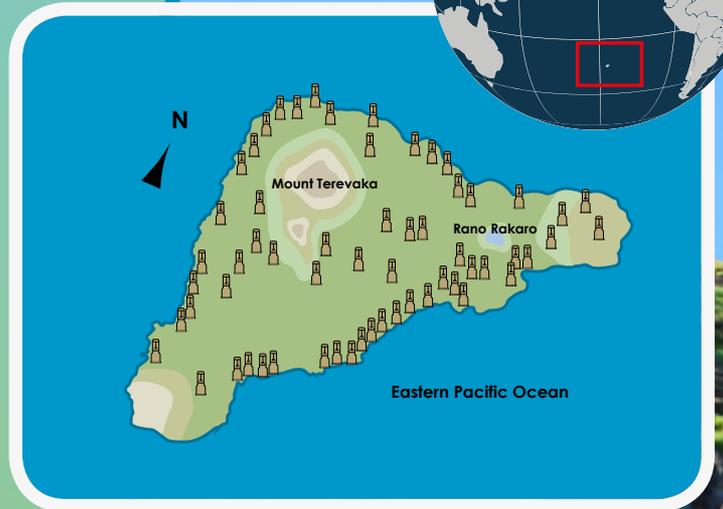
Easter Island and the Moai

Megaliths

The moais are megaliths. In other words, each statue is a large stone that forms a prehistoric monument.

There are about 1000 moai statues. Some moais weigh up to 86 tons and reach 10m in height, though most average about half of this, which is still really heavy and really tall!

But are these famous statues really just big heads? It turns out that each statue has a full body!



?! GET THIS...



After two famous heads were dug up, archaeologists discovered that the statues had bodies too! They even found pictures of Polynesian canoes carved into the back of the statues, these are known as petroglyphs.

Carving the statues

The native islanders, the Rapa Nui, carved the statues from rocks made of compressed volcanic ash called 'tuff' around 1400 to 1650 A.D. The rocks are found in the volcano Rano Raraku. This substance is easy to carve with *toki* which are handheld chisels that the Rapa Nui used.

Represent!

The moais were carved in honour of chiefs and other important people who had died. Each moai was placed on the tomb of the person the statue represents. This is why each moai has different features.

?! GET THIS...



Easter Island is one of the most isolated places on Earth, so how did these giant statues get there? Archaeologists Terry Hunt and Carl Lipo believe that they were walked! In 2012, a 5 ton moai replica was made and shipped to Hawaii. There, 18 people teamed up to move the giant statue from one place to another by rocking it from side to side using only ropes and team work. Good news is, it worked!

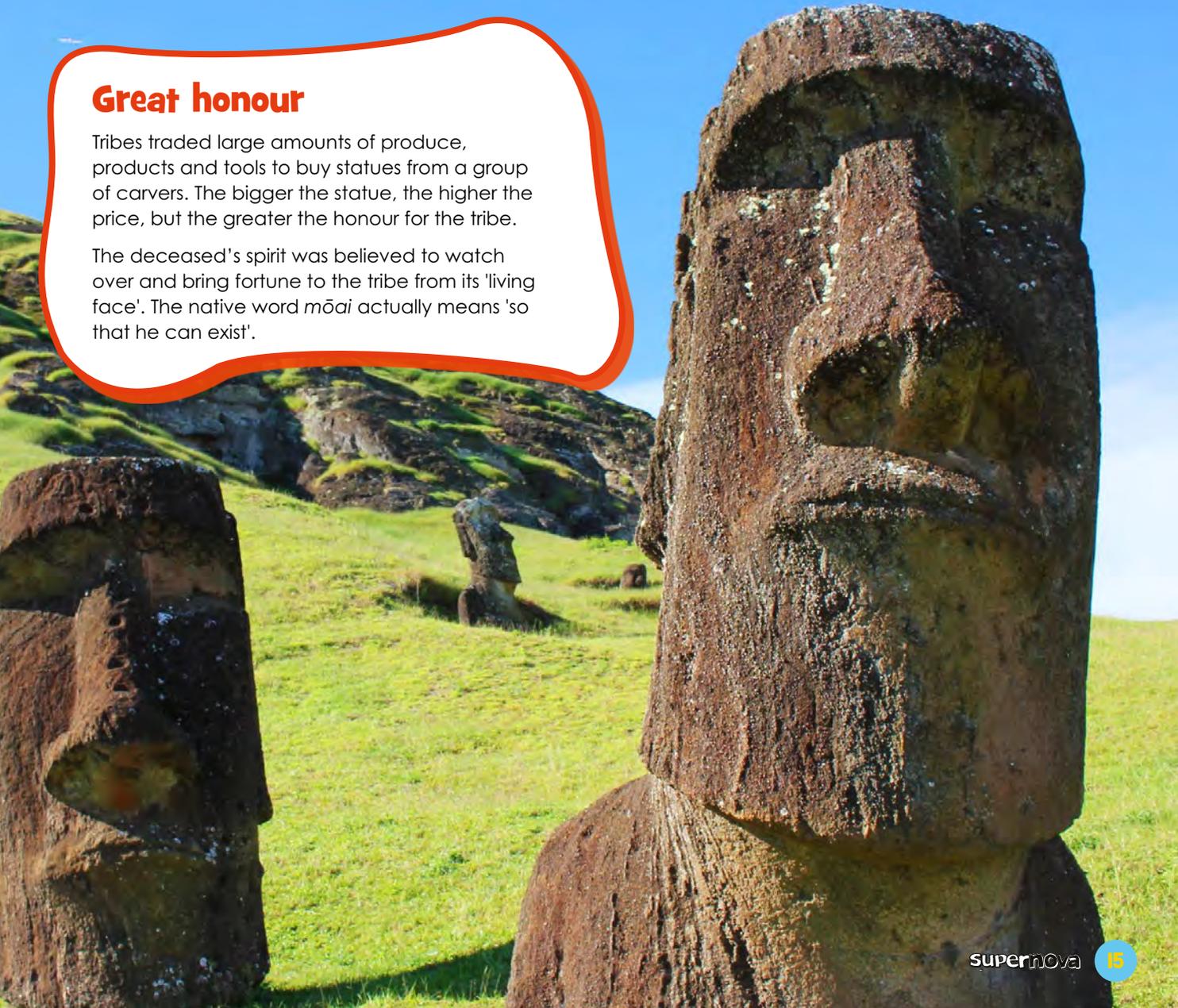
Tip your hat

What may look like hats on some of the moai statues' heads actually represent long hair tied up like a ball on top of the head. Long hair was believed to be a sign of mental power, or *mana*. Chiefs never cut their hair for this reason.

Great honour

Tribes traded large amounts of produce, products and tools to buy statues from a group of carvers. The bigger the statue, the higher the price, but the greater the honour for the tribe.

The deceased's spirit was believed to watch over and bring fortune to the tribe from its 'living face'. The native word *mōai* actually means 'so that he can exist'.



KNOW YOUR

MEMES

Chances are that you and your friends love sending memes around about the latest movies, video games, and current events. But what do you know about memes? Are you ready to settle the pronunciation debate once and for all?

Words by Kendall Behr

?! GET THIS...

1st



The first ever really well-known internet meme is a gif of a creepy dancing baby. The 'ooga chaka baby' or the 'Ally McBeal baby' is 23 years old! Gifs and animations were pretty new, and people spread the baby through email. It has thousands of remakes and cameos on shows, including a TV show called *Ally McBeal*.

WHERE DOES THE WORD "MEME" COME FROM?



The word 'meme' was coined by the scientist Richard Dawkins. He wanted a word that would mean ideas and information that are imitated and copied amongst people of the same culture or beliefs, just like our genes are copied and shared between families to create our unique bodies (check out 'The ABC's of DNA' if you want more info on page 36). He shortened the Greek word *mimeme* which means 'something that is copied' to 'meme' and told his colleagues that it should 'rhyme with cream'.



Not my business



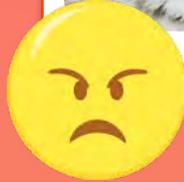
If you think about it, memes are like the genes of ideas on the internet! Many new memes are based on references to old shows and ideas, like "It's a trap!" from *Star Wars: The Return of the Jedi*, which came out in 1983!



?! GET THIS...



The original cat from the ever-popular 'grumpy cat' meme died recently, at age 7. In real life, her name was Tardar Sauce. Grumpy Cat rose to fame after her first photos went online in 2012. Her cute grumpy face was caused by an underbite and feline dwarfism. She has been made into stuffed toys and featured on advertising campaigns.



Mareelize!



WHERE DO MEMES COME FROM?

Memes come from people on the internet sharing their ideas and feelings through culturally understandable sound bites. As the world has become more globalised, people all over are watching the same TV shows, reading the same books, and talking to each other on the internet. This cultural melting-pot has made it easier to share a joke or an idea in a way that everyone will understand. Memes come from people using iconic pictures, or even stock photographs, overlaid with text, and putting them on the internet.



So...

Each country has their own memes and inside jokes too, of course. A lot of South African memes use stills from footage of politicians in parliament to mock the politicians or make comments about the political climate. Another recent popular meme is 'Mareelize' who crashed into a rugby goal post on her bicycle. Since then she's become somewhat famous and even fired the starting gun for the 2019 Cape Cycle Tour. There were t-shirts and funny pictures doing the rounds in her honour!



YOU THINK THAT LIBRARIES ARE JUST BOOKS?



Next time you get a funny meme from a friend, think for a moment about how this meme has traveled across other people's minds and devices to bring an idea to your fingertips.

Can you think of any other iconic meme that you'd like to share with the Supernova team? Send us an email or message on Instagram, Facebook, and Twitter!

Life, the universe and everything

WORLD LEADERS

You like my presidential birthday suit?



ELIZABETH! IT'S TIME FOR TEA!



No more Putin up with shirts!

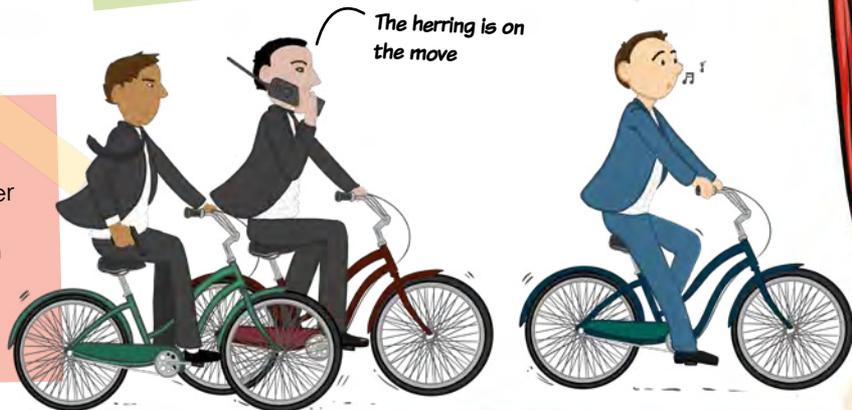
The president of Russia, Vladimir Putin, likes to be photographed topless. It's probably to make up for the fact that it's illegal for most people to touch him past the wrist!

God of Buckingham

Prince Phillip, the Queen of England's husband, is worshiped as a god on the South Pacific island of Tanna. There's a legend of a pale skinned son of a Mountain Spirit who went across the sea to look for a powerful wife. Prince Phillip wore white the first time the people of Tanna saw him.

Prime Example

Mark Rutte, the Prime Minister of the Netherlands, uses a bicycle to get to work, even when he's on state visits overseas. His bodyguards need to be pretty fit!



Im a multi-tasking mom



Jacinda

New Zealand's Prime Minister Jacinda Ardern is the third woman to hold the office. She is the youngest Prime Minister since the 1850's and was the first head of state to take maternity leave. She was heavily pregnant with baby Neve just before taking office.

Fine, I'll do it myself!



Minister of all things everything

Kim Jong Un, leader of Northern Korea has several official titles. His longest one is: "The Main Leader of the Democratic People's Republic of Korea, the Leader of the Party, and the People". He's also known as "The New Start", "The Brilliant Comrade" and "The Genius Among Others". Many North Koreans also believe that he invented the hamburger.

I pledge to not take contributions from the oil, gas, and coal industry and instead prioritize the health of our families, climate, and democracy over fossil fuel industry profits.



Cortez

Alexandria Ocasio-Cortez, is an American politician and a Democrat. She's the youngest woman to ever serve in the Congress. She worked as a waitress and a bartender before running for Congress in 2018.



Prezi

Our own president, Cyril Ramaphosa, was born in Soweto. He holds honorary doctorates from 7 universities around the world and was one of the people that helped to write our Constitution in 1996. He can speak all of South Africa's 11 official languages!

FLAGS OF THE WORLD

PART 2

1

2

3

A



B



C



D



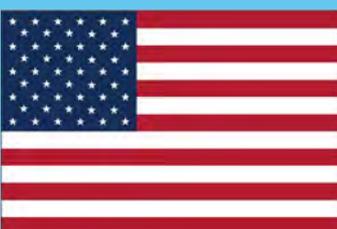
E



F

lags have been around for over 5 000 years, and the colours and designs people choose have stayed remarkably consistent. African flags often feature red, green and yellow, while European flags usually feature red, blue and white. Almost 50% of the world's flags use three colours instead of two or four. Most flags have either horizontal (pales) or vertical (fesses) divisions. Study these flags and see if you can find similarities or differences. The history of each flag is quite unique! Do you know them all? **Answers on page 49.**

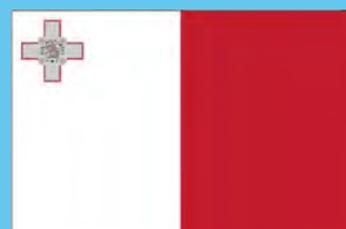
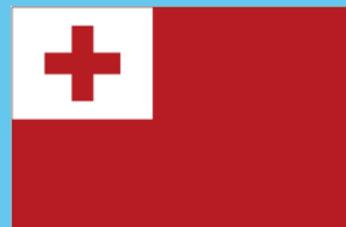
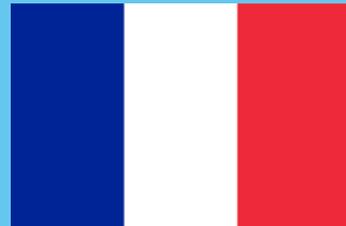
4



5



6





1 – Real Time Ray Tracing

Ray tracing is all about the way light is shown in video games. With this new technology, light can even bend or shine differently depending on what surface is reflecting it. Imagine seeing your laser beams reflecting off of your enemies' shiny armour in real time!

2 – Life-like character models

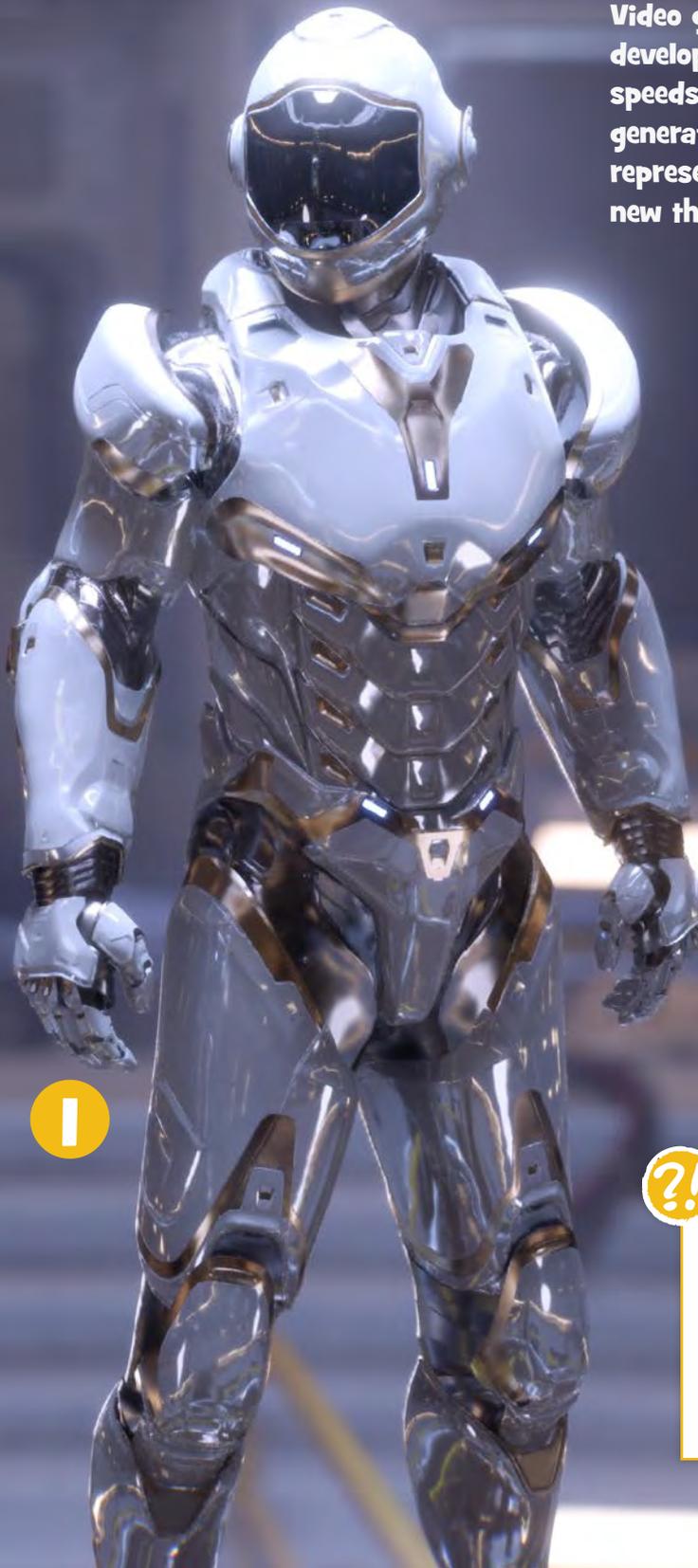
This is Siren and she is a real-time digital character. Epic (the creators of *Fortnite*) teamed up with the Unreal Engine to create this incredibly realistic digital avatar.

3 – Flowy hair

Electronic Arts devoted a whole team of people to generate super realistic hair in the Frostbite Engine. Look forward to ever excellent video game hair days.

THE NEXT BIG THING IN GAMING

Video game graphics are developing at supersonic speeds. The three computer generated images here represent the most exciting new things to look out for.



GET THIS...

A game engine is the basic software people use to build video games. Three of the biggest game engines and their games are the Unreal Engine (*Fortnite*), Unity (*Monument Valley 2*) and Frostbite (*Need for Speed*).

Hidden Pictures™

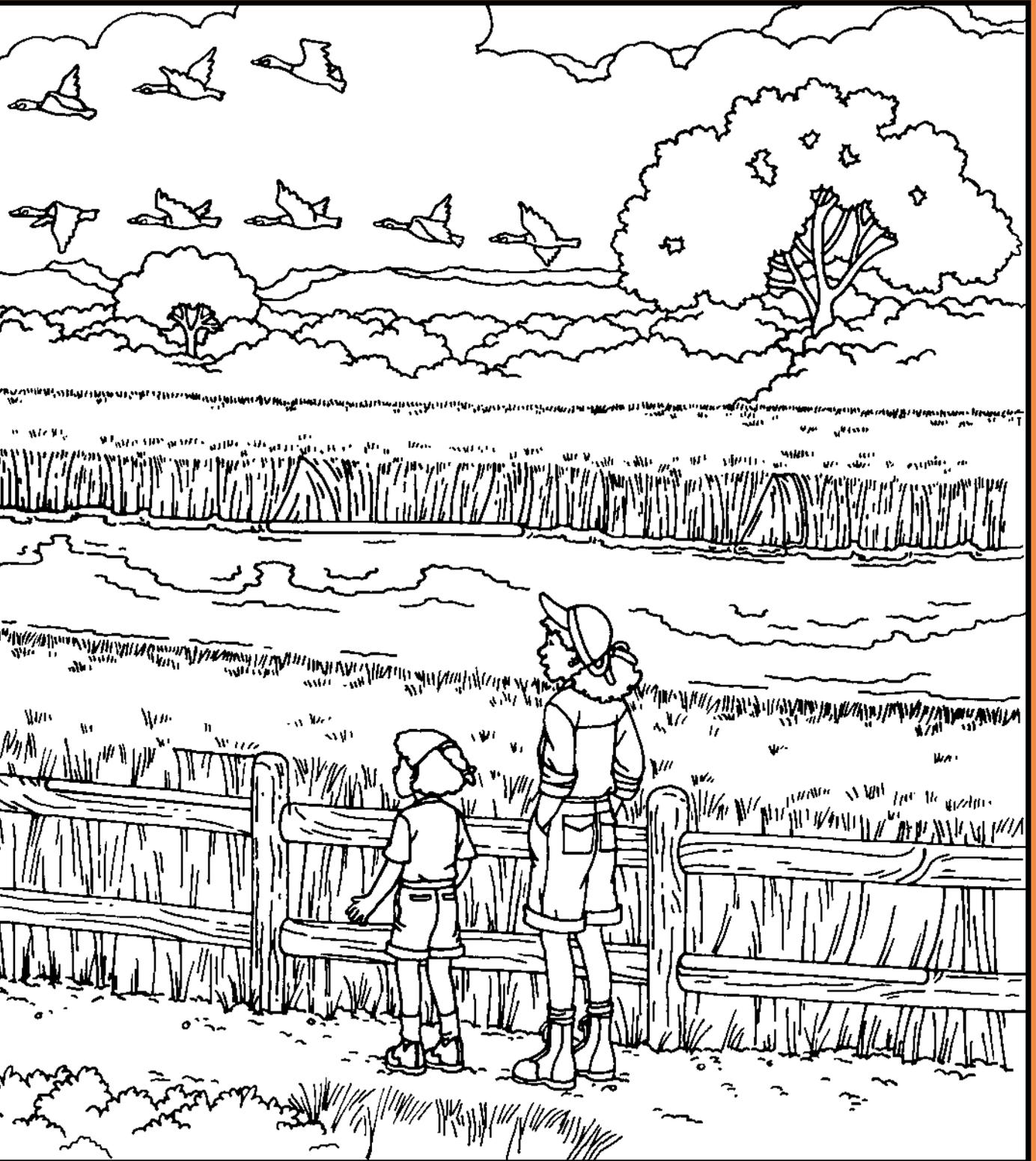


To order a copy of Highlights Hidden Pictures™, go to kidsmag.co.za. Six books to collect!

Flying Geese

Can you find all these 12 hidden pictures?

Umbrella, candle, bowl, light bulb, baseball bat, toothbrush, tea cup, hatchet, slice of pie, flag, hair comb, wishbone



©Highlights™

Solutions on page 47

supernova

Illustrated by Sally Springer



Words by Nadja Botha

Illustrations by Benoit Knox and Vicki Venter

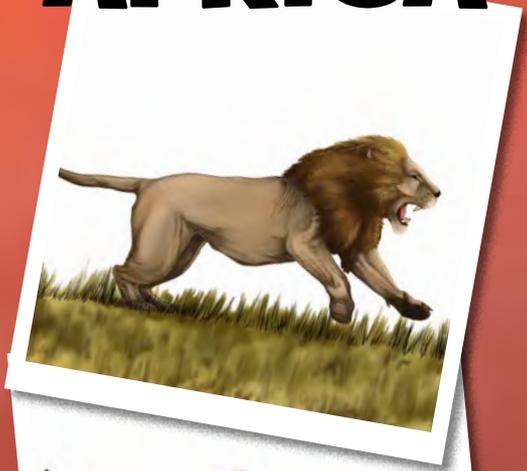
LIONS

THE PRIDE OF AFRICA



I'm so excited!
I just
photographed a
male lion hunting.

These magnificent
creatures, really are
fearsome and deserve
their place at the top of
the food chain.



Of the famous big five, the lion is king. It's known by many names: the king of the jungle, *simba*, and its scientific name *panthera leo*.

A male lion can grow up to 1.2m at the shoulder and they can weigh over 190kg! A lioness can measure 1.1m at the shoulder and can weigh up to 130kg. In the wild, lions live between 10 and 14 years.

Their habitat includes the savannah, plains, grasslands, dense bush and woodlands. They love feasting on giraffes, zebras, impala, waterbuck, kudus and even some birds and lizards! Lions don't have a lot of enemies. They try to steer clear of hyenas, but man is their worst enemy and the reason why they are endangered.



Lions used to roam the entire South Africa and most of Africa. Now they are confined to a few national parks and game reserves.

Mane

Male lions have huge manes that cover their neck and shoulders. The manes make them look large and impressive for females and rival males. The mane also protects the lion's neck when it is attacked by another lion.



Adaptations & Anatomy

Tails and ears

Lions have black tipped tails and black spots behind their ears. These are "follow me" signs. The black tip on the tail is exactly the right height for a cub to follow its mother through the tall grass.

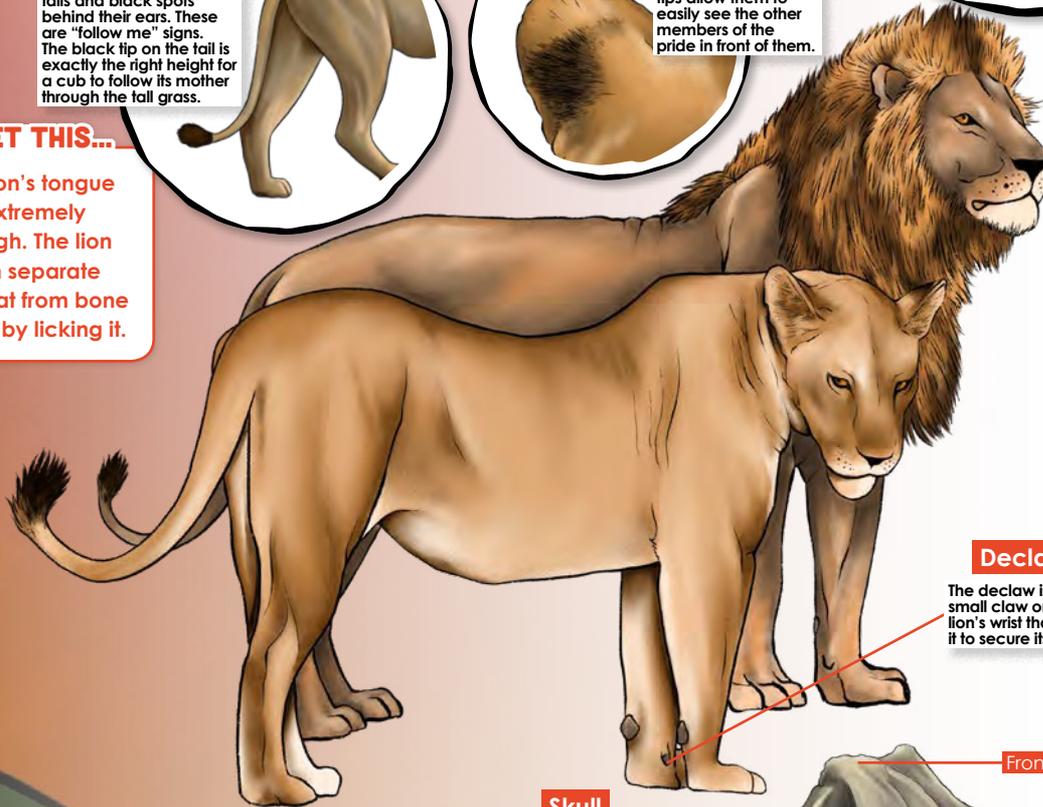


Lions use their ears and their tails to communicate with each other when they hunt. The black tips allow them to easily see the other members of the pride in front of them.



! GET THIS...

A lion's tongue is extremely rough. The lion can separate meat from bone just by licking it.

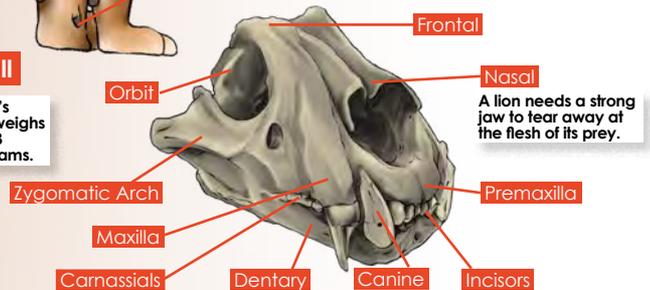


Declaw

The declaw is a small claw on the lion's wrist that helps it to secure its prey.

Skull

A lion's skull weighs over 3 kilograms.



A lion needs a strong jaw to tear away at the flesh of its prey.

The long canines are used to grasp and kill prey, but they are useless in feeding.

Lions have a well-developed carnassial shear. These teeth are flattened, and they act like scissors to cut meat and sinew.

Claws

The lion uses its claws to grab and secure prey. The claws are pushed out by muscle contractions when the lion needs to hunt. They retract into a protective sheath to keep them from becoming blunt.



Why are lions at the top of the food chain?

Lions are important because they are apex predators and at the top of the food chain. They play a crucial role in the ecosystem by keeping the numbers of animals like zebras, wildebeest and antelope to healthy standards. This in turn will keep the grasslands and forests healthy and ensure that the circle of life continues.



Life in the pride

Lions are the only social cats in the bushveld. They live together in groups called a pride. A pride is made up of a family of females, mothers, daughters, sisters and grandmothers.

A pride does not necessarily have one dominant male. Territories can be held by a coalition of 2 – 5 males. A coalition makes it easier for the males to defend their domain and to keep hyenas and other lions away. Females in the pride help each other take care of the cubs and will even nurse each other's cubs. Living in a pride means that the lionesses can help each other protect their cubs from other predators like hyenas.

?! GET THIS...

After resting during the day, the pride will engage in contagious behaviour. This includes yawning, grooming and communal roaring. This creates unity in the pride.

Together the pride can hunt big game like zebra, wildebeest and even buffalo. Working together also improves their chances of a successful hunt. It is usually the females that do the hunting, but the males are the ones who will eat first. Only when the male has a full stomach can the females and the cubs get their share.





Communicating when you are a lion

Communication is very important when you are living in a pride. With those sharp teeth it's important to know when someone is irritated. Lions make several different sounds when they communicate. They can moan, purr, growl, snarl, roar and the cubs meow. They even use their bodies to communicate with each other while hunting.

Lions roar to let other lions know that this territory is taken. Every lion knows what the other members in the pride sound like. So it is easy to hear when it is an outsider that is roaring in the distance. Lions usually roar at night, when they are most active and when there are fewer sounds. This allows their roars to travel far and wide over the savannah.

?! GET THIS...
A lion's roar can travel almost 7 kilometres, depending on the time of year and the weather.



Famous lions

Lions have been a part of human culture for centuries. They symbolise strength, courage, loyalty and royalty. It's no wonder that they appear in all sorts of stories, and that their own real-life stories impact us so much. Here are some of the most famous examples.



Simba - *The Lion King*



Aslan - *The Chronicles of Narnia*



The cowardly lion - *The Wizard of Oz*

Cecil - Cecil the lion became famous when he was shot and killed by an American trophy hunter. It caused a huge outcry on social media and the hashtag **#cecilthelion** was shared more than 250 000 times within 24 hours.



Chaos - Chaos is a 16-year-old lion that is being treated for skin cancer at the Muelmed Mediclinic in Pretoria. He received his first treatment at the 'human' hospital in May 2019 and is reportedly doing very well.

Christian - In 1969, two Australian travellers, Ace Bourke and John Rendall, bought a lion cub from a shop called Harrods in London. Christian lived with them in the UK. When he became too big, they took him back to the wild in Kenya. When they went back years later Christian remembered them and even gave them a big lion hug.



Leo the lion - Leo is the famous roaring lion for the Hollywood film studio Metro-Goldwyn-Mayer. His roar has been on movie screens since 1957.

Conservation

Lion populations are getting smaller all over Africa. Sixty years ago there were approximately 450 000 lions across Africa. Today the lion population is between 20 000 – 30 000.

So why is the 'King of the Jungle' in danger of becoming extinct? One of the main reasons why lions are losing their habitat is because the human population is increasing. The more humans there are, the more homes and buildings we need. So we use the lion's natural habitat to build on.

Trophy hunting is also a big problem, it claims more than 600 lions a year, most of them being males. It is legal to hunt a lion for sport or for a trophy, all that you need is a CITES permit.

Communities all over Africa are killing lions that kill

their livestock. Due to the loss of their habitat and their natural prey disappearing, lions are forced to look for food elsewhere and this sometimes mean that they catch the cattle and goats of nearby villages. The villagers retaliate by hunting and killing the lion to keep the village and their livestock safe.



Lions should be allowed to roam free. Check out our article Big Cat Rescue in vol 8.3.

There are several organisations that work towards lion conservation in Africa, like the African Wildlife Foundation (AWF) and Panthera. Both organisations aim to educate people about the importance of lions and how we can protect them. You can help protect the king of the jungle by learning more about lions and the challenges they face, and then telling others about what they can do to save the majestic lion.

I can't imagine Africa without lions. I also can't imagine a world where future generations would only know lions from photos.



We need to support the work of our national parks and conservation organisations to secure their future and bring balance back to nature.



Reduce Reuse Recycle



Make your own toys and crafts with Kraftex FrogzEggz®. It's easy to use, non-toxic and biodegradable. You can reuse it over and over again!

MAKE A LION FINGER PUPPET

WITH KRAFTEX FrogzEggz®

How to prepare the FrogzEggz®



Get an adult to help you heat a pot of water to 60°.



Pour the FrogzEggz® into the pot.



Stir until you get a clump of molten plastic.

How to colour your plastic



Knead the clump together.



Paint it with water paint or powder paint.



Knead the mixture until you get the right colour.

?! GET THIS...
You can reheat and remould the plastic as often as you want!

Now let's make a lion finger puppet



Knead a clump into a disk.



Wrap the disk around your finger.

Allow it to cool and harden.



Roll another clump into a ball and press your finger in to make the mane.



Make a ball for the face and press it into the mane.



Use a chopstick to make eye sockets.



Make ears and a muzzle with smaller balls of plastic.



Make a small black nose.



Add two white FrogzEggz® into the eye sockets.



Add the finishing touches with a marker.



KRAFTEX FrogzEggz® IS IDEAL FOR CRAFT, COSTUME DESIGN AND SCHOOL PROJECTS.

Predictions

What we know now...

in the future of the past.

Illustrations by Marin Erasmus



A phrase we hear often is "one day they will...". Usually, it signals some sort of prediction. Some predictions can be made with confidence, while others seem downright crazy! We take a peek into the past to find some of the most popular predictions that were supposed to come true in our time.

The dark ages

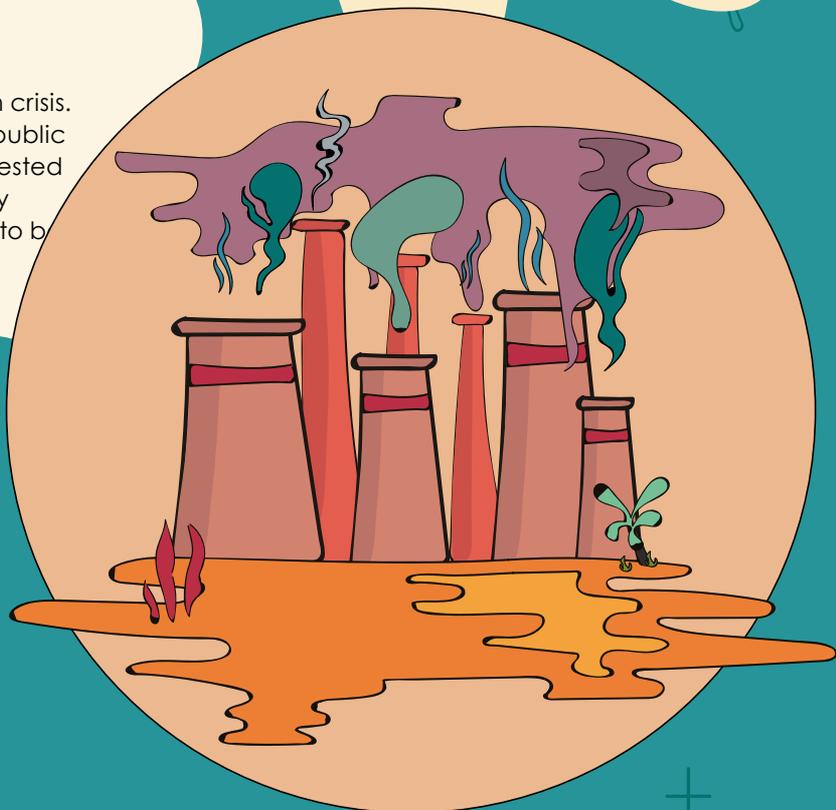
In 1970, *Life* magazine predicted that air pollution will reduce the amount of sunlight reaching Earth by half before 1985. While the article didn't really explain how the writer came up with this prediction, it did state that scientists had evidence to back it up. The magazine explained the horrible effects of losing our sun, such as wearing gas masks when going outside and not being able to farm our lands. Even if we don't sit around in the dark all day, this prediction is not outrageous at all.

For real...

Earth has a major pollution crisis. The article motivated the public to act, and so people protested on the first Earth Day. Many environmental laws came to be after this.

?! GET THIS...

On Earth Day in 2012, more than 100 000 people in China rode their bicycles to reduce the amount of CO2 emissions and save fuel.



Spelling errors

Back in 1901, an article in *Ladies Home Journal* predicted that the letters C, X and Q will disappear from the alphabet!

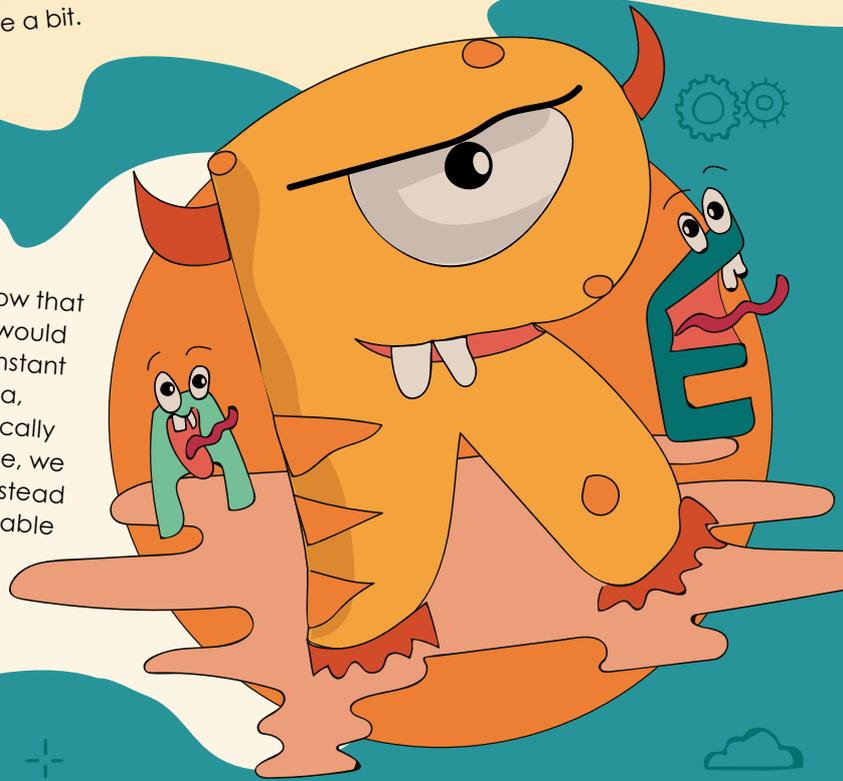
Apparently, some people thought those letters were not needed and newspapers would soon begin to spell words based on sound. Our alphabet still has a place for those letters and newspapers won't let their writers take any spelling shortcuts. Still, our communication (and spelling!) has changed quite a bit.

?! GET THIS...

The average person only uses a few hundred words in their conversations every day.

For real...

Back then, there was no way to know that the world's tech savvy generation would create a 'new language' through instant messaging, texting and social media, but these spelling shortcuts are basically spelling words by sound. For example, we often use 'u' instead of 'you' or 'r' instead of 'are'. It hasn't become an acceptable way of spelling at work yet, so all 26 letters are safe... for now.



Y2K Tech-pocalypse

Few people can say they've experienced the turn of a millennium, so it's understandable that in 1999 people were unsure what to expect when the first day of the new year of the new millennium came along. Back then, computers processed the year using the last two digits of the number. So, the year 2000 would be 00, like the year 1900. Many believed this would cause computers to crash, major networks to fail, and blackouts to happen all over the world, and that it would put an end to the technology era. Of course, these predictions caused a major freakout among believers.





For real...

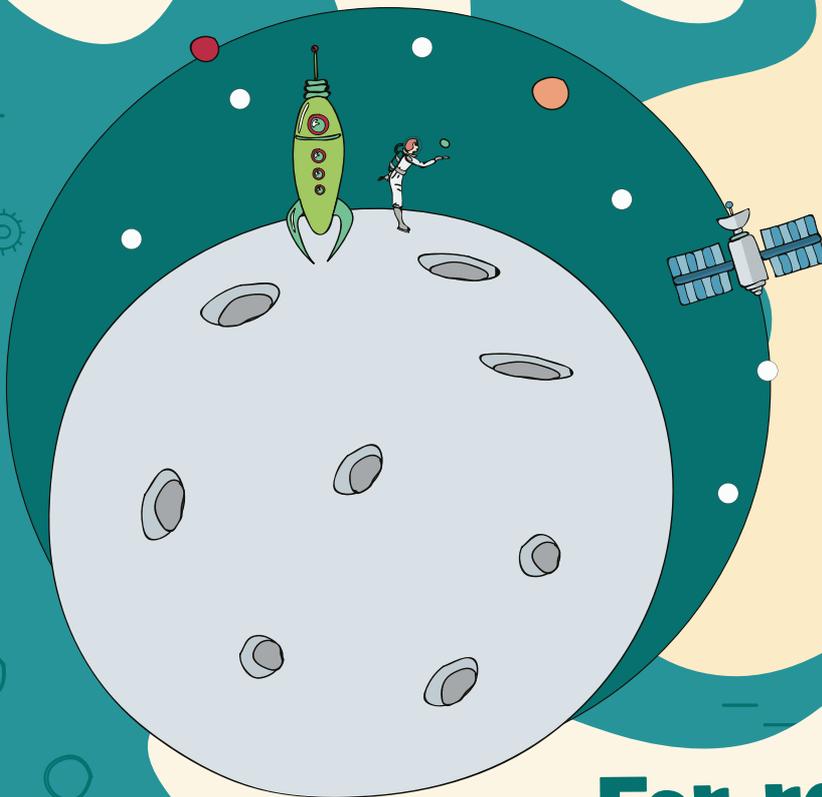
Governments spent billions of dollars to rectify this 'problem' with the computers. Insurance companies began selling Y2K plans which would be stored in their failed computer networks if these predictions came true. People built bunkers, as if it was the 1950s and the Cold War was in full steam. They stocked up on canned goods and prepared for the worst, but as we all know, nothing happened.

?! GET THIS...

The first city in the world to welcome in the new and unpredictable millennium was Gisborne in New Zealand.

Solar and Space

In 1952 scientists at the International Congress of Astronautics in London predicted that "journey through space in rocket ships" would be a common and affordable form of transportation in the future. In the same year the American Chemical Society in New York, happily predicted that solar power would be the main form of energy.



For real...

Today solar power is one of the most important renewable energy sources with hydro and wind. Many countries are investing in solar power, with Germany and the rest of Europe leading the pack, but it has not yet become the world's main energy source.

Also, space travel is by no means an affordable mode of transportation, since a ticket could cost at least R3 million! Companies, like SpaceX and Roscosmos, are working on making space travel more affordable, but it doesn't come close to the average person's travel budget yet!

?! GET THIS...

Although space holidays are still a thing of the future, it's not impossible to get to space. The first man to orbit the Earth was Yuri Gagarin from Russia on April 12, 1961.

Are you sure about that?

Some famous 'prophets' said...

» So, some scientific predictions have been somewhat correct, but these are downright bonkers!



"Rail travel at high speed is not possible because passengers, unable to breathe, would die of asphyxia."
Dr. Dionysius Lardner, 1830



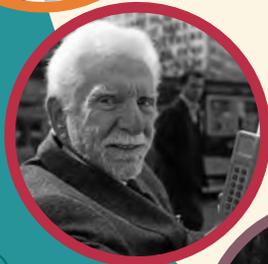
"The horse is here to stay but the automobile is only a novelty - a fad."
Horace Rackham, President of the Michigan Savings Bank advising Henry Ford's Lawyer, 1903



"Television won't last because people will soon get tired of staring at a plywood box every night."
Darryl Zanuck, movie producer, 20th Century Fox, 1946



"Before man reaches the moon, your mail will be delivered within hours from New York to Australia by guided missiles. We stand on the threshold of rocket mail."
Arthur Summerfield, U.S. Postmaster General, 1959



"Cellular phones will absolutely not replace local wire systems."
Marty Cooper, Inventor, 1981



"Everyone's always asking me when Apple will come out with a cell phone. My answer is, 'Probably never.'"
David Pogue, The New York Times, 2006



Today we know that most of the past's predictions remain just that... predictions. At least, these predictions have created awareness of important issues and have opened our eyes to new avenues of knowledge that will lead to greater human accomplishments.

The ABCs of DNA

Words by Venetia Beytell

Illustrations by Johann Smith



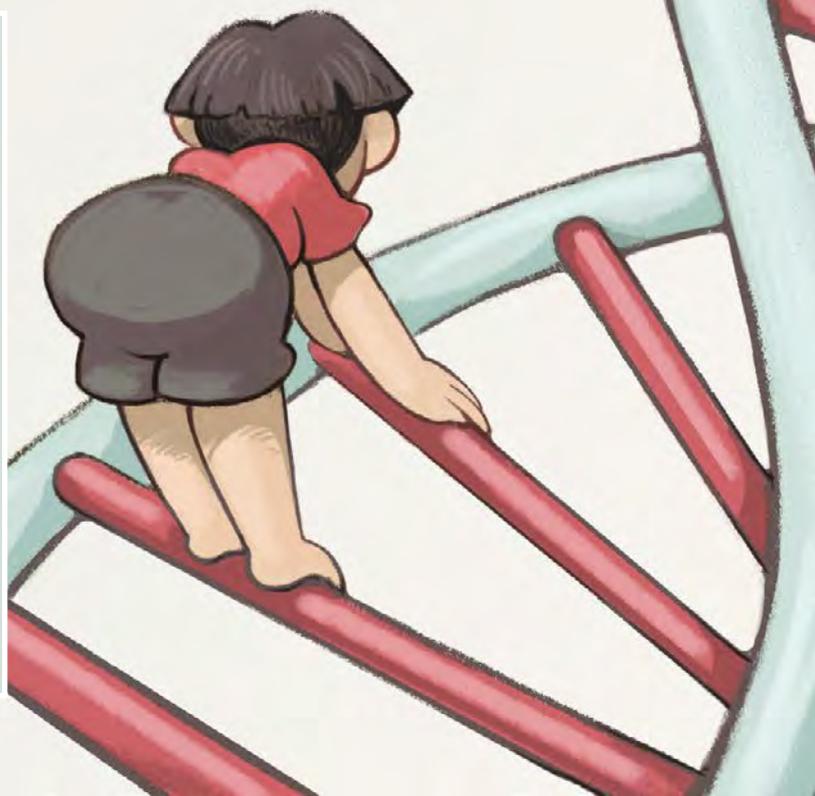
Do you have the same hair colour as your mom or the same nose as your dad? Is everyone in your family super tall or extremely athletic? These similarities are all a result of DNA. DNA (also known as deoxyribonucleic acid) is the recipe for creating living organisms like plants and animals.



A recipe for DNA

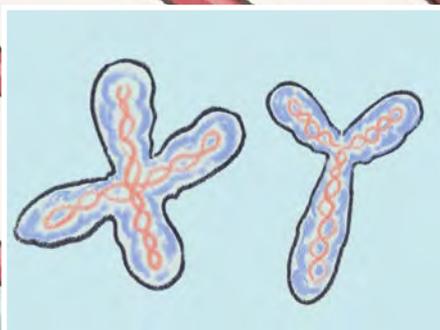
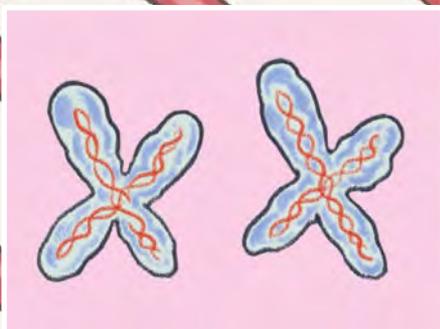
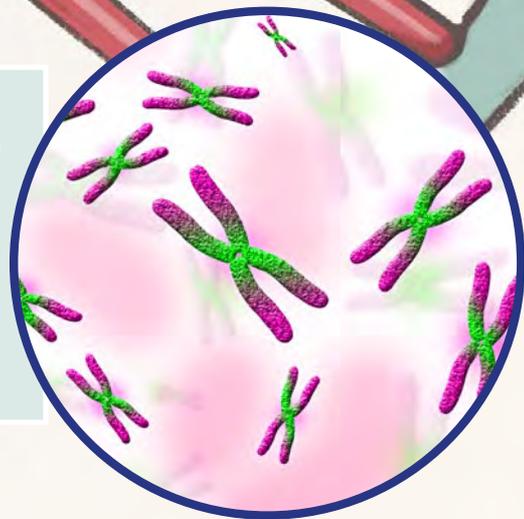
DNA is a long, thin molecule (a collection of atoms) made up of something called nucleotides (these are the ingredients of the recipe). There are four different types of nucleotides which are usually recognised by the first letter of their names: A (adenine), T (thymine), C (cytosine), and G (guanine).

Because DNA is a recipe, it calls for the A and T nucleotides to be paired together and the G and C nucleotides to be combined. Billions of these pairs combine to create a strong and compact double helix structure that kind of looks like a twisted ladder! These pairs allow each strand to act as a backup for the other which keeps our precious genetic information safe.



The building blocks of DNA

How is it possible that something so tiny can have such a large impact on what your body looks like? DNA strands fold into paired packages called chromosomes, which are stored in the nucleus of your cells. Chromosomes also contain many genes which instruct molecules called proteins. These proteins have many jobs: from making sure one single cell grows and functions properly, to determining the shape of an entire organism.



It's all in the genes

Our bodies look the way they do because our DNA recipe needs 46 chromosomes (23 pairs) for our species to be created. These chromosomes are what pass on the genetic information that makes us unique. In each pair, one chromosome comes from our father and another from our mother. One of these chromosome pairs determines whether we are born as boys or girls. Boys have one X and one Y chromosome while girls have two X chromosomes.

Stuff we're made of

We are formed from our DNA because it lives in our cells. Similar cells are grouped together to form tissues and these tissues, when grouped together, form organs like the heart, kidneys and stomach. And, you guessed it, when these organs are grouped, they create a living system like you.

Your DNA is important because it determines your physical characteristics. DNA is an amazing scientific resource in determining identities, solving crimes and improving human life in general through scientific innovation.

?! GET THIS...

DNA was first used in 1987 to catch a criminal. In 1989, it was first used to prove someone's innocence.

?! GET THIS...

About 99,9% of the DNA of every person on Earth is exactly similar. This means that it's only that 0,1% of your DNA that makes you unique!

Why is DNA important?

Since DNA is the recipe for all living things, it is often manipulated by scientists in order to select the best characteristics of living creatures as well as to create new varieties of life. This is called genetic engineering and some examples thereof include plants that can resist drought or bacteria that can mass-produce life-saving hormones.



Just like physical characteristics, like eye colour, certain diseases, like diabetes or cancers, are also likely to run in families. DNA helps us to become aware of the diseases in our families and doctors can even sometimes use genetic testing to see potential diseases in a baby that hasn't been born yet.

?! GET THIS...

Humans and slugs share 70% of the same DNA while humans and chimpanzees have a remarkable 98% genetic similarity.

DNA can be used to unite children and their parents. Many adopted children use DNA testing to find their biological parents. DNA testing has also been used in natural disasters to unite families that have been separated.



Dolly was the first mammal to be cloned using DNA from another sheep.

How do you think your DNA makes you unique?





I can do that!

All you will need is:



jelly tots



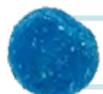
sour straw candy/
liquorice



toothpicks

Candy Double Helix

2 The Jelly Tots will correspond to DNA bases. Create a key for your jelly tots. Label one colour 'adenine', another colour 'thymine', another colour 'guanine' and the last colour 'cytosine'.



adenine



thymine



guanine



cytosine

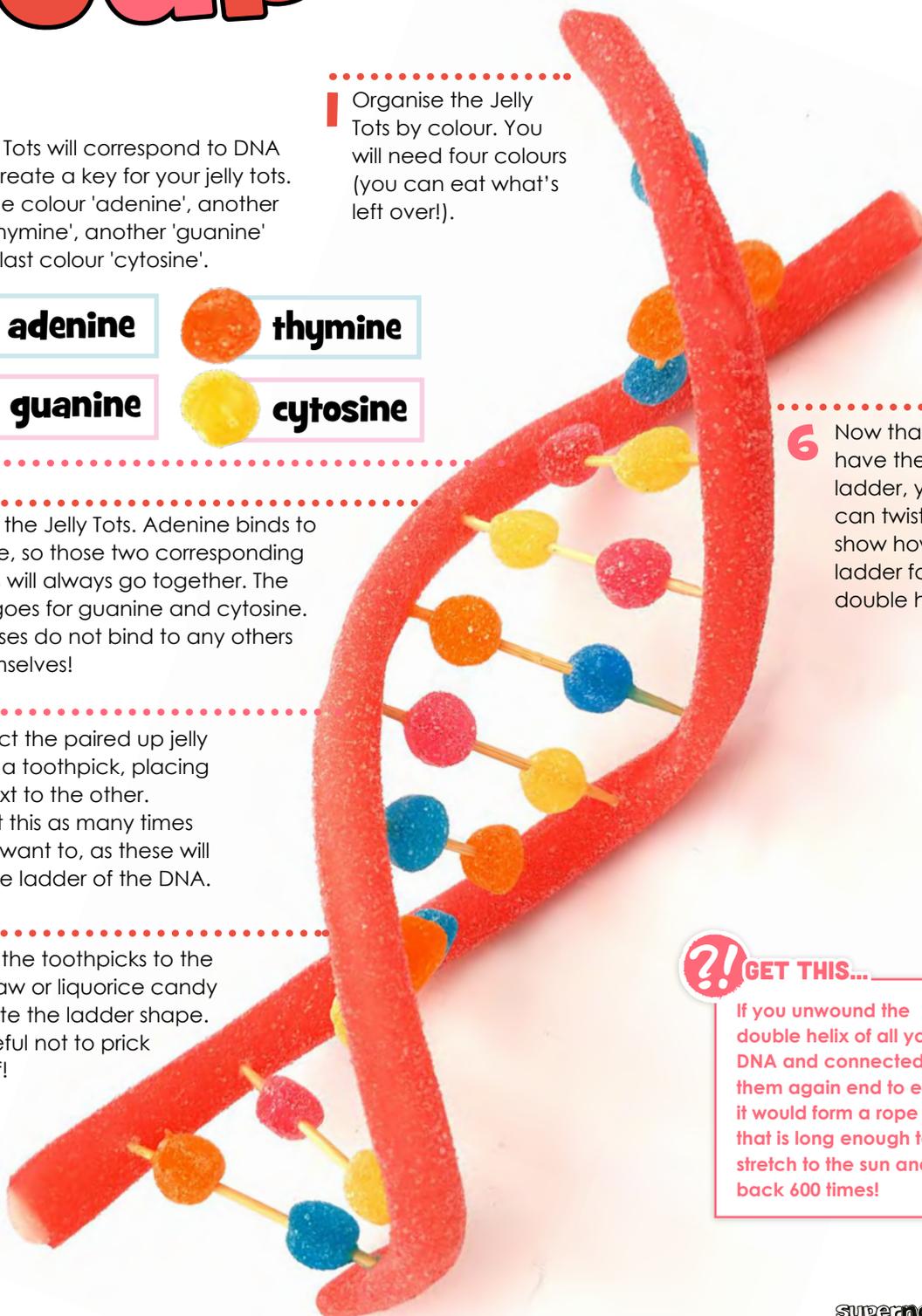
1 Organise the Jelly Tots by colour. You will need four colours (you can eat what's left over!).

3 Pair up the Jelly Tots. Adenine binds to thymine, so those two corresponding colours will always go together. The same goes for guanine and cytosine. The bases do not bind to any others or themselves!

4 Connect the paired up jelly tots on a toothpick, placing one next to the other. Repeat this as many times as you want to, as these will form the ladder of the DNA.

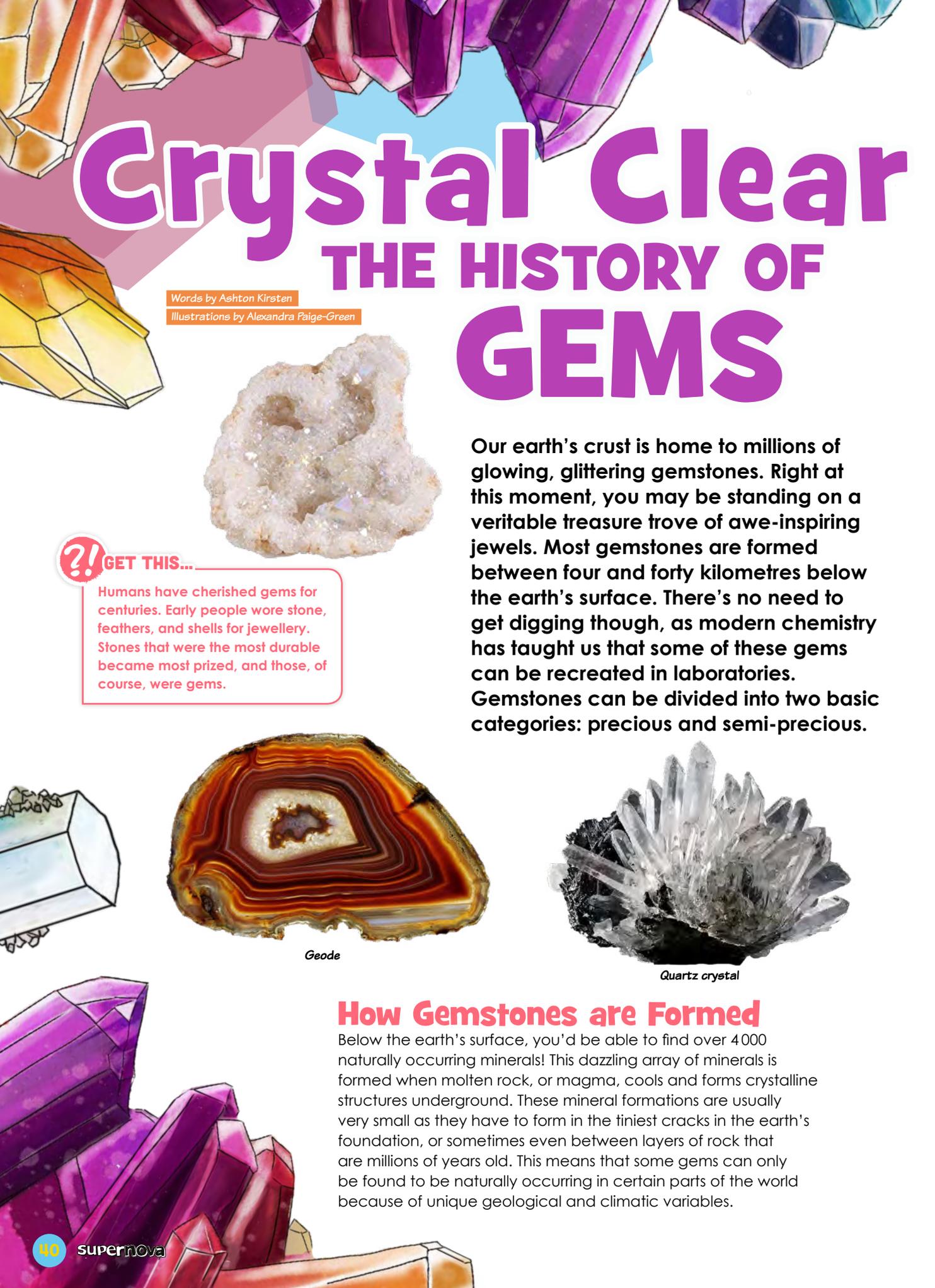
5 Attach the toothpicks to the sour straw or liquorice candy to create the ladder shape. Be careful not to prick yourself!

6 Now that you have the DNA ladder, you can twist it to show how the ladder forms a double helix!



?! GET THIS...

If you unwound the double helix of all your DNA and connected them again end to end it would form a rope that is long enough to stretch to the sun and back 600 times!



Crystal Clear

THE HISTORY OF GEMS

Words by Ashton Kirsten

Illustrations by Alexandra Paige-Green



?! GET THIS...

Humans have cherished gems for centuries. Early people wore stone, feathers, and shells for jewellery. Stones that were the most durable became most prized, and those, of course, were gems.

Our earth's crust is home to millions of glowing, glittering gemstones. Right at this moment, you may be standing on a veritable treasure trove of awe-inspiring jewels. Most gemstones are formed between four and forty kilometres below the earth's surface. There's no need to get digging though, as modern chemistry has taught us that some of these gems can be recreated in laboratories. Gemstones can be divided into two basic categories: precious and semi-precious.



Geode



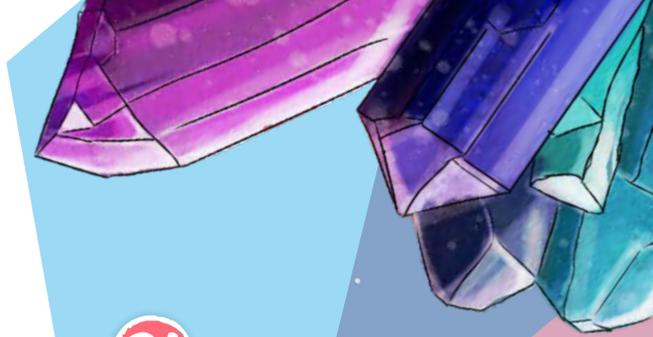
Quartz crystal

How Gemstones are Formed

Below the earth's surface, you'd be able to find over 4000 naturally occurring minerals! This dazzling array of minerals is formed when molten rock, or magma, cools and forms crystalline structures underground. These mineral formations are usually very small as they have to form in the tiniest cracks in the earth's foundation, or sometimes even between layers of rock that are millions of years old. This means that some gems can only be found to be naturally occurring in certain parts of the world because of unique geological and climatic variables.

Growing gemstones in labs

Gemstones are unique formations and combinations of chemical compounds, and with the right tools and ingredients scientists can replicate these natural wonders almost exactly. These synthetic gem compounds have been around since the 1800s and were developed more for their use in laser technology and microelectronics than fancy jewellery. Growing these synthetic gems is quite the process and can be rather time-consuming. But, growing them is a whole lot quicker than waiting thousands of years for the earth to form them!



?! GET THIS...



Painite is the rarest stone in the world! Until 2001, only three crystals were known to exist.



January
Garnet

February
Amethyst

Birthstones

Many people believe in birthstones. Each month of the year is assigned a different gemstone which shows certain characteristics about people born in that month. Lists like this have occupied their space in world history for centuries. The oldest of these lists, the Ayurvedic birthstone list, can be traced back to 1500BC and relates to Ayurvedic Indian medical practices. Traditionally, the Indians wore their birthstones every day. They believed that the gems provided them with a unique set of physical and mental benefits.

?! GET THIS...

The most expensive gem in the world is the red diamond. Unlike other varieties of diamond, there are less than 30 red diamonds in the whole wide world. These blood red stones cost about R14 million per carat (which is 200 milligrams, that's the weight of about 60 ants!).

Jade in China

In Chinese culture, jade is widely regarded as one of the most precious materials. Carved, ornamental jade was reserved for the wealthiest and most powerful individuals throughout the dynasties. Historically, jade has been referred to as 'the stone of heaven' because its powers connect heaven and earth.

?! GET THIS...

Diamonds are not that rare. In fact, when compared to some other gemstones they are of the most common precious stones around, but this doesn't stop people from spending a lot of money on them!



Jade Box

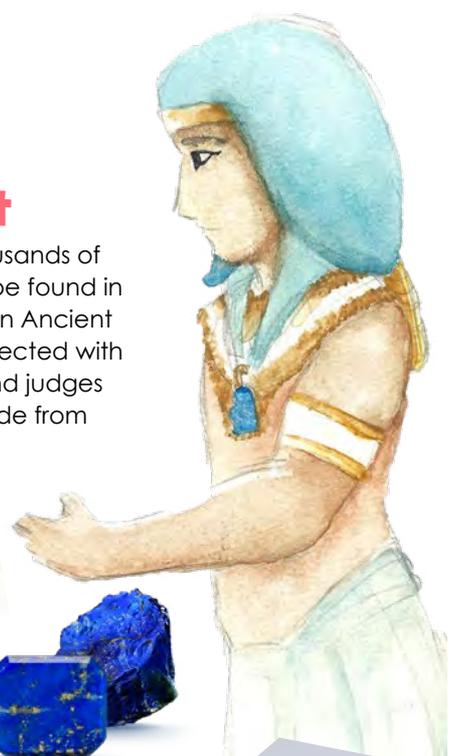


Lapis Lazuli in Ancient Egypt

People have revered lapis lazuli gods for thousands of years, and this deep blue mineral can even be found in prehistoric tombs in Asia, Europe and Africa. In Ancient Egypt, this mysterious stone was deeply connected with ideas of power. Pharaohs loved lapis lazuli and judges wore emblems of the god of truth, Maat, made from this semi-precious rock.



Read more about lapis lazuli in issue 7.2 of *Supernova*.



Ancient Amber

Amber is the softest gemstone and, believe it or not, is made of fossilised tree resin. This glowing yellow gem has been appreciated since Neolithic times. Sometimes ancient bugs and critters are preserved in an amber honey-like tomb. Have you ever seen tree sap coming out of a tree with a bug stuck in it?

?! GET THIS...

Amber is actually a part of a tree's immune system. When a tree was damaged it would release a sticky resin to help seal the wound.



What about diamonds?

Diamonds are the only gemstones formed out of one pure element: carbon. They are the hardest natural substance on Earth. Diamonds can conduct both heat and electricity, making them as versatile as they are beautiful.

?! GET THIS...

To make sure the diamond reached its destination safely, the Cullinan diamond was sent to England in an unmarked postal box while a fake was escorted by detectives on a steamboat. Now that's what you call a diversion!

The Cullinan Diamond

Our most famous local gem was excavated in January 1905, and is sometimes referred to as the 'Star of Africa'. The nearly flawless massive stone was divided into nine major gemstones and 96 smaller stones. Because South Africa was a British colony, it is no surprise that many South African diamonds found themselves on their way to England and are even in the queen of England's crown jewels. South Africa truly is a gem!



From diamonds to crystals, amber to jade, gemstones come in all shapes, sizes and colours. For hundreds of years they have done a great job of grabbing our attention and will continue to do so for hundreds more.



I can do that!

All you will need is:



Glass of epsom salts



Glass of hot water

Grow your own

CRYSTALS

In a few easy steps, you can become a fully-fledged crystal-growing geologist, right in your own home. Here you can learn how to grow a crystal called epsomite, which can be found on the walls of limestone caverns or mines. This crystal was first described in 1806 in England and can naturally form in shades of grey and pink. Let's get to growing a spiky crystal garden that you can add to your crystal collection!

?! GET THIS...

Don't use boiling water from the kettle. Rather use hot tap water because, if the water is too hot, it will affect the consistency of your crystals.

1

In a glass container, mix a cup of epsom salts with a glass of hot tap water.

2

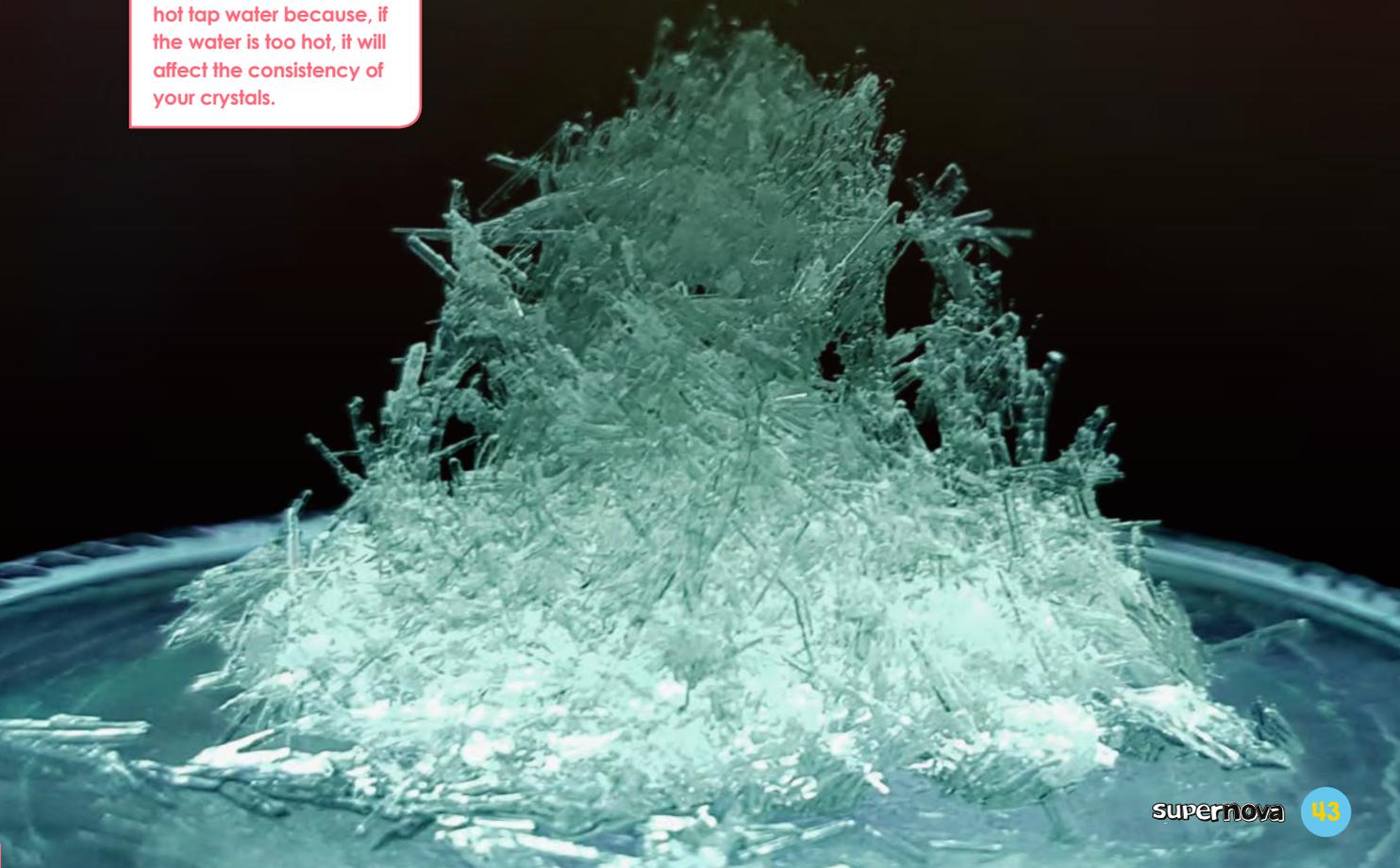
Stir for two minutes to dissolve the Epsom salts. There may still be some undissolved salts at the bottom, but they won't cause any trouble. So there's no need to worry about them.

3

Place the container with the mixture in the fridge for four hours, or overnight.

4

Retrieve the container after four hours and bask in the glory of your cool crystalline creation!





Words by Kendall Behr

Illustrations by Anand Potgieter

If the idea of plucking a whirring frisbee out of the air to score a goal sounds fun, ultimate frisbee is for you!

Ultimate Frisbee

You need:



Two teams with equal amounts of players, with the minimum usually being four, and the recommended size being between five and seven players per side.



A large open field or beach. A soccer or rugby field is perfect, but any open area that you can set up markers with cones (or jackets and shoes) will work just as well. You need about 110 metres in length, and 40 to 60 metres in width.



A heavy frisbee (this will make it more stable in the wind).

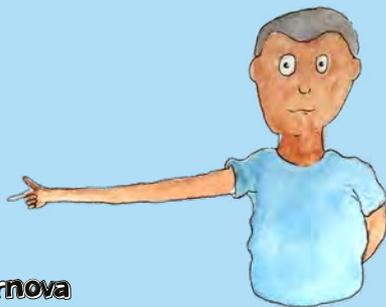
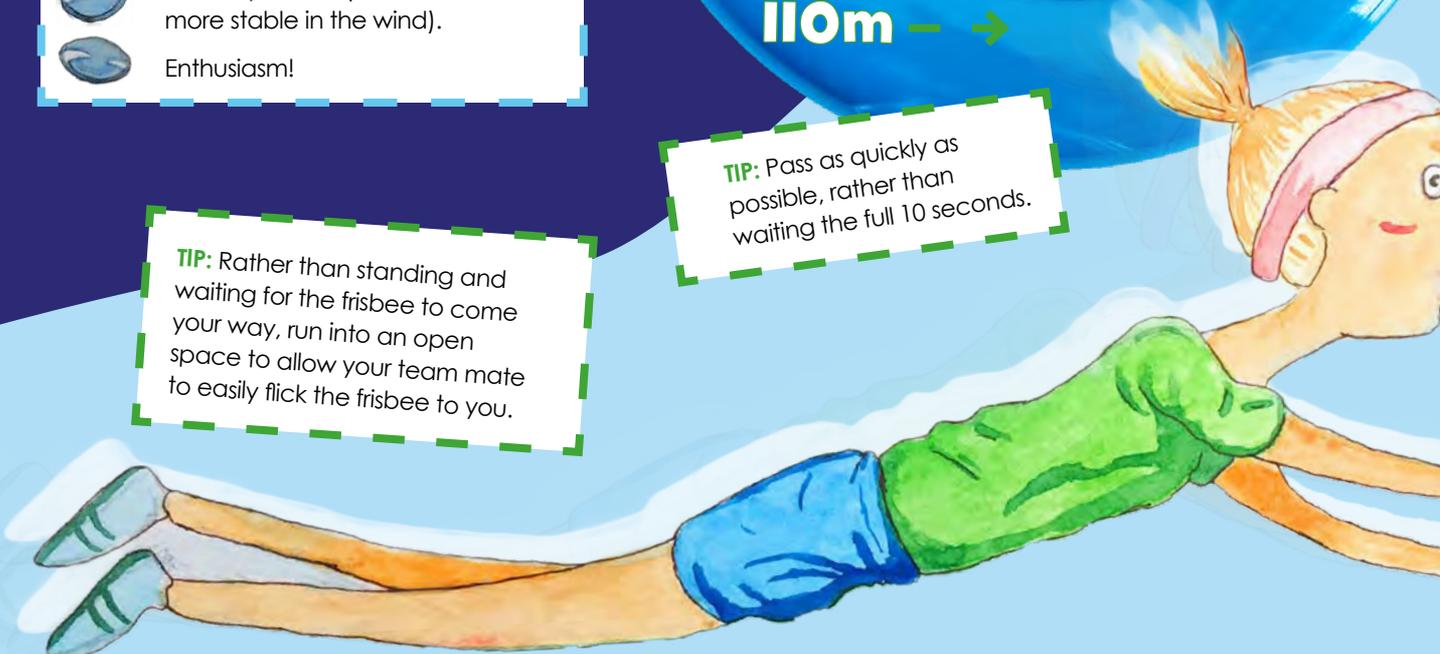


Enthusiasm!



TIP: Rather than standing and waiting for the frisbee to come your way, run into an open space to allow your team mate to easily flick the frisbee to you.

TIP: Pass as quickly as possible, rather than waiting the full 10 seconds.



TIP: Keep your elbows up and out, flick the frisbee using your forearm and wrist for effective, fast passes.

The rules:

 The team that lost the coin toss starts the game by throwing the frisbee to the other team (this is called a pull). You also pull after each round (every time a goal has been scored).

 Each round starts with both teams standing on their goal line. After the pull, the teams can run in and begin play.

 No running with the frisbee. Stand still (or pivot on one leg) and throw it to your team mates. Once it's in the air, run!

 The longest you can hold the frisbee is 10 seconds. It's up to the person defending you to start counting down if they feel like you're taking too long.

 If the frisbee hits the ground after you threw it to a team mate and they fumbled, missed or the opposite team smacked it to the ground, it belongs to the other team.

 You're allowed (encouraged, even!) to snatch the frisbee out of the air, as well as smack it to the ground if you can't completely catch it.



No contact! You can stand in front of the person with the frisbee, and wave your arms, or do whatever you want to distract them, but if you touch them, the frisbee stays in their team's possession.

TIP: Make safe throws rather than heroic ones.

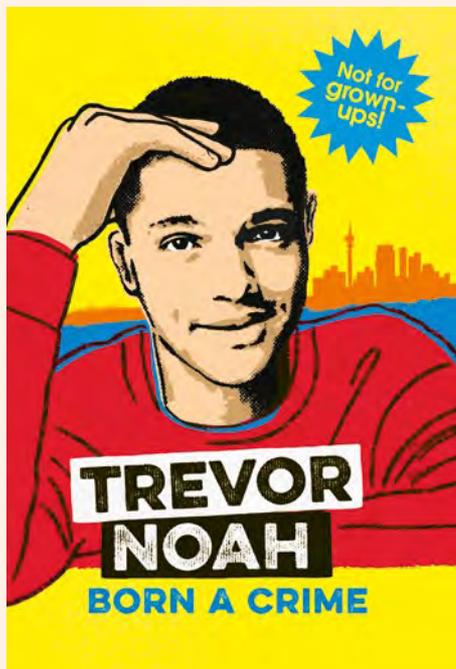
How to score (and win!):

 The frisbee needs to be caught in the goal zone. Goal zones should be about 20 metres wide.

 You can decide what the winning score should be, but it's generally 15 goals.



BOOK Competition



'If my mother had one goal, it was to free my mind. My mother spoke to me like an adult. She was always telling me stories, giving me lessons, Bible lessons especially. She was big into Psalms. I had to read Psalms every day. She would quiz me on it. "What does the passage mean? What does it mean to you? How do you apply it to your life?" That was every day of my life. My mom did what school didn't. She taught me how to think.'

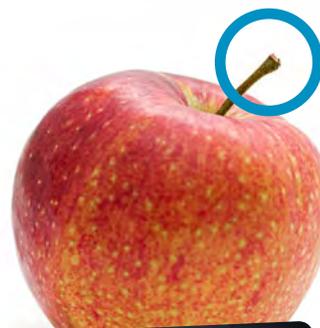
Trevor Noah grew up in South Africa with a black South African mother and a white Swiss father at a time when it was against the law for a mixed-race child to exist. But Trevor did exist.

In *Born a Crime*, Trevor shares what his life was like growing up. The stories he tells in this book will make you laugh, cry and fill you with wonder and inspiration as you learn how this mischievous young boy used his quick wits and humour to get through his day-to-day life. Against all odds and with his mother's unfailing love and belief in him, Trevor overcame many obstacles to create a promising future for himself.

To win a copy of *Born a Crime*, send us a photo of you and your favourite issue or article from *Supernova* magazine! Send your entry to mail@kidsmag.co.za

*competition T's and C's apply

What in the World?



Close-up of an apple stalk



Close-up of book pages

Hidden Pictures™



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FLAGS OF THE WORLD

PART 2



- A1- Argentina
- A2- Greece
- A3- Cuba
- A4- Bosnia
- A5- Virgin Islands
- A6- Cameroon
- B1- Croatia
- B2- Ethiopia
- B3- Sri-Lanka
- B4- Turkmenistan
- B5- Western-Sahara
- B6- France
- C1- Burkina-Faso
- C2- Bolivia
- C3- Gabon
- C4- American Samoa
- C5- Chad
- C6- Tonga
- D1- Thailand
- D2- Samoa
- D3- Uzbekistan
- D4- Vietnam
- D5- Yemen
- D6- Belarus
- E1- Azerbaijan
- E2- Timor-Leste
- E3- Brazil
- E4- USA
- E5- China
- E6- Malta



We had a great interview with Jude and Dom from Easy Freak, the hottest new band in Pretoria and Johannesburg!



EASY FREAK INTERVIEW



Dom and Jude have known each other for about six or seven years. They describe their genre as pop/RMB/funk. They don't have a label, but release and record their own music.

What would you say to encourage kids to get into the music industry?

Jude: Keep following your dream of becoming a musician and be wise with money and how you see yourself. A big part of Easy Freak is that we try very hard to be ourselves.

Something that's on your bucket list?

Jude: It's always been a dream of mine to go to Machu Picchu.

Dom: I want to go skydiving, bungee-jumping, shark cage diving, all the cool stuff.

Favourite song that you've written?

Jude: On the new album, our song called "Magic" is my favourite at the moment.

Dom: Also one from our new album, called "Options". It's very heartfelt.



The new album *No Lies* is now available



Easy Freak came to visit the Supernova magazine headquarters



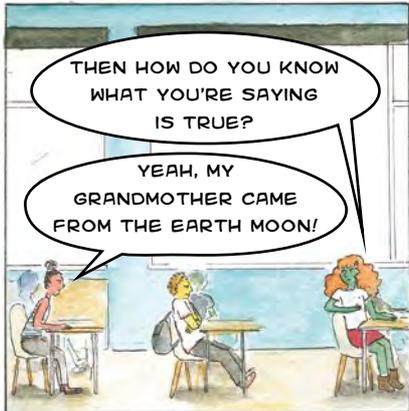
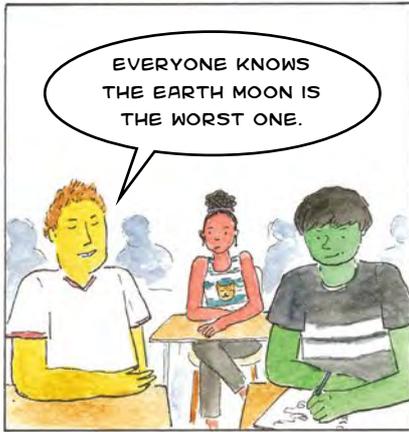
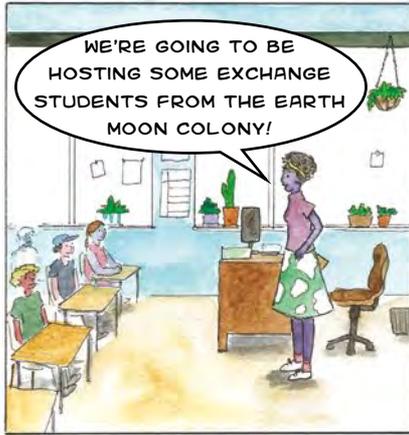
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Maya LeMaitre

MIMI'S LIFE ON MARS



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