

CHILDREN'S MAGAZINE OF THE YEAR



WITH
ENCYCLOPAEDIA
BRITANNICA

What on Earth!

MAGAZINE

December 2025/
January 2026





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A wild and wonderful world awaits you inside!



THE BIG QUIZ

Test your and your family's knowledge of animals, space, culture and festive facts with our fun quiz on **page 28**.



THINK DIFFERENT!

Learn all about animator and entrepreneur Walt Disney on **page 53**, and see how his creative ideas changed animation and family holidays forever.



HOW TO CHAT...

Proceed with caution! But if you *really* want to chat with an alligator, turn carefully to **page 12**.

REGULARS

FACTOPIA

Follow the trail of crazily connected facts on **page 4**, all the way from how to escape an avalanche to... a plant that eats insects!

WORD UP!

Limericks are a fun and bouncy type of poem that are hilarious to write and recite. Learn how to create your own on **page 14**.

EUREKA!

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EYE DON'T BELIEVE IT

Page 43

MAP IT!

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SEND IT IN!

Oink oink! Head to **page 62** to check out our readers' piggie impersonations and find out how to enter our festive joke competition.



HOW TO MAKE BATH BOMBS

Looking for a handmade Christmas gift to give, or just want to relax in a warm bath? Find out how on **page 64**.



FUNNY ANIMALS

Why is it so funny when animals act like people? All is explained (with plenty of funny animal photos) on **page 54**.



SNAP IT!

Check out these sporting shadows and other photos from around the world on **page 6**.

CHRISTMAS TRADITIONS

Where does Santa visit on a surfboard? Find out on **page 44**. Plus: Christmas witches, Christmas pickles and lots of other fun festive traditions.



JOKES & RIDDLES

Look out for this month's selection, hand-picked by our jokes editor, May, on **page 66**.

SEND IT IN!

Email us your letters, photos and favourite facts to:
letters@whatonearthmag.com

Jokes



What has **eight arms** and can tell the time?

A **clock-topus!**



LOL!

Why don't **elephants** use computers?

They're **afraid** of the mouse!



How many **skunks** does it take to make a stink?

A phew!

HA! HA!

Why are **magicians' exams** so difficult?

They're full of **trick questions!**



FACTopia!

Follow the trail of crazily connected facts all the way from escaping an avalanche to... a plant that eats insects!

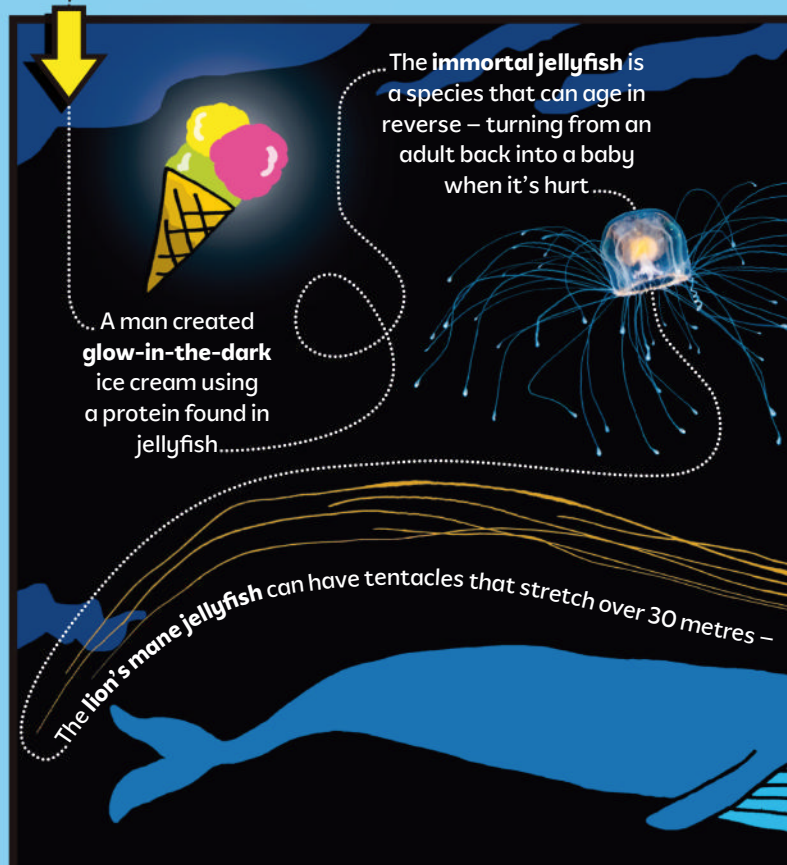
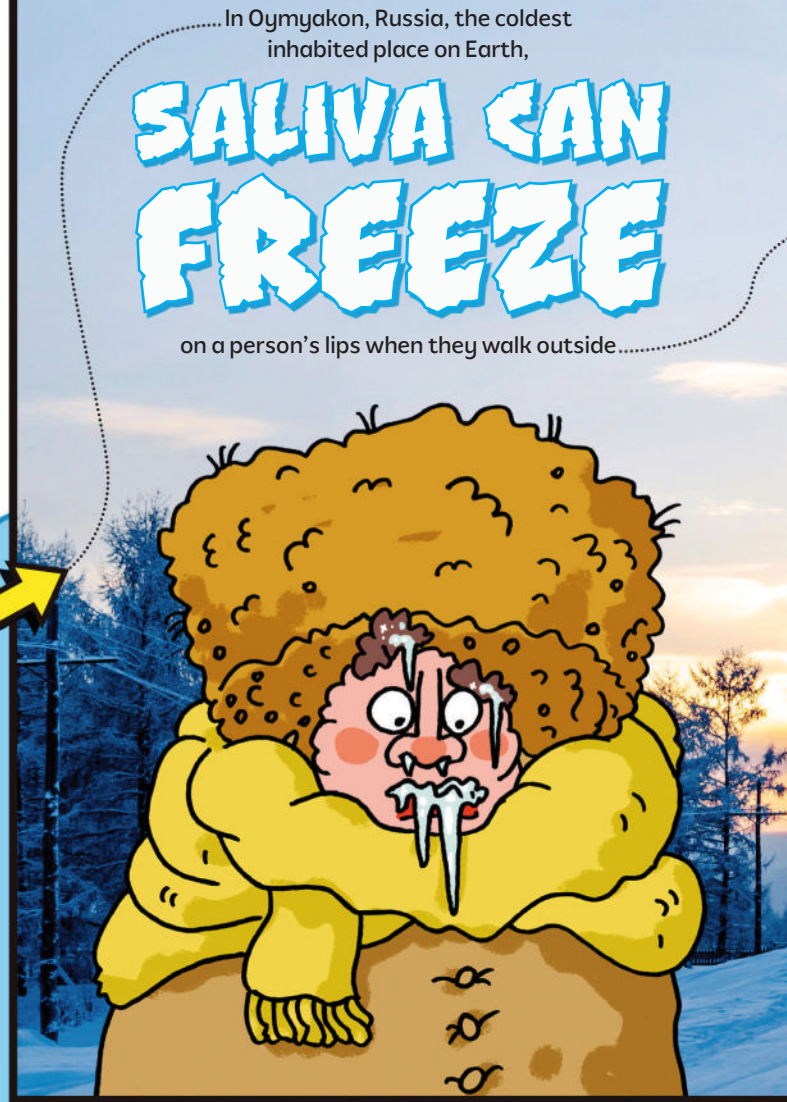
By Kate Hale, Paige Towler, Julie Beer
and Rose Davidson
Illustrations by Andy Smith

A person caught in an **avalanche**

should spit to tell which way is up
– gravity pulls the saliva down

to the ground, so digging in
the opposite direction is
the way out of the snow

START
HERE



Uranus is the **coldest planet** in our solar system, with temperatures dipping as low as -224°C .



An 11-year-old invented **the ice lolly** after accidentally leaving a wooden stirrer in a sugary liquid outside on a cold night...



Some Roman emperors ate an early form of **ice cream**. They had ice brought down from the surrounding snowy mountains and flavoured it with fruit and juice...



One ice-cream shop sells a flavour called 'Cold Sweat' – it's made with three types of **chilli** and two different hot sauces...



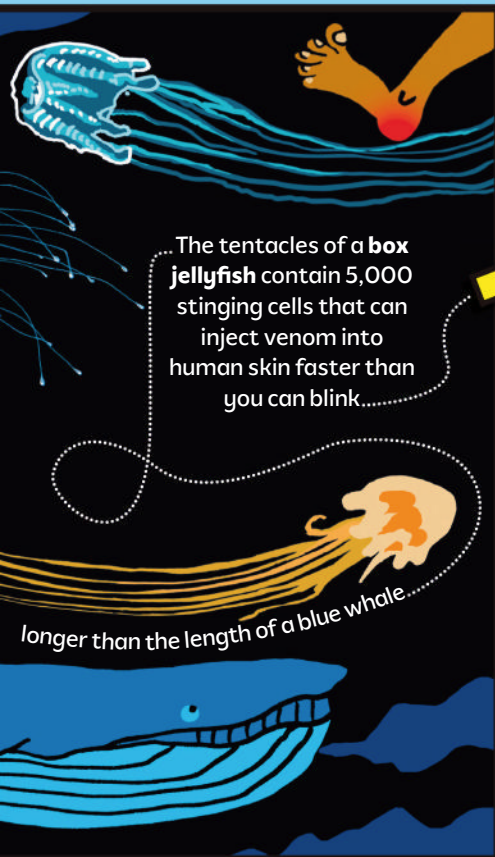
Some types of ice cream include an ingredient called a stabiliser that's made from **seaweed**. It helps to stop your treat from melting too fast!



Some dessert companies have professional **ice-cream scientists**



The tentacles of a **box jellyfish** contain 5,000 stinging cells that can inject venom into human skin faster than you can blink...



longer than the length of a blue whale...

No people live on Snake Island, off the coast of Brazil, because it is home to thousands of golden lancehead vipers, whose venom can

MELT HUMAN FLESH

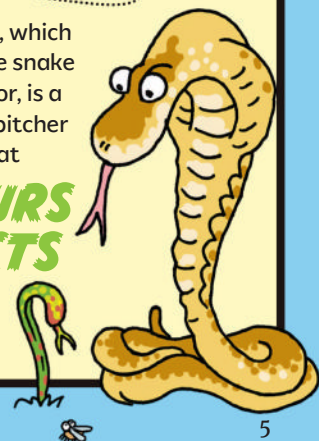


Special zoologists called **snake milkers** extract venom from snake fangs to help medical researchers create life-saving antivenom...



The cobra lily, which resembles the snake it's named for, is a carnivorous pitcher plant that

DEVOURS INSECTS



An aerial, high-angle photograph of a dense urban landscape, likely Hong Kong, showing a massive cluster of high-rise buildings. The buildings are packed closely together, with varying architectural styles and colors, including many shades of beige, tan, and brown. The perspective is looking down from a high altitude, creating a sense of depth and scale. A large, red, comic-style speech bubble with a yellow polka-dot border is superimposed on the upper left portion of the image. Inside the bubble, the text "SNAP IT!" is written in large, bold, white capital letters with a black outline. Below this, in smaller white text, it says "Astonishing photos from around the world".

SNAP IT!

Astonishing photos from
around the world



REACHING FOR THE SKIES

Photographer Wei Zhuangtao captured this striking aerial image of Hong Kong using a drone and a photo-stitching technique. He calls the spiky scene Cage of Ten Thousand Arrows.



IPA/WEI ZHUANGTAO

SNAP IT!

SHADOW PLAY

In this photo, taken in Yibin, Sichuan, China, middle school students play on a basketball court as the low Sun casts very long shadows that make the players seem larger (and taller) than life!



IPA 2024/CHENGCHENG SONG



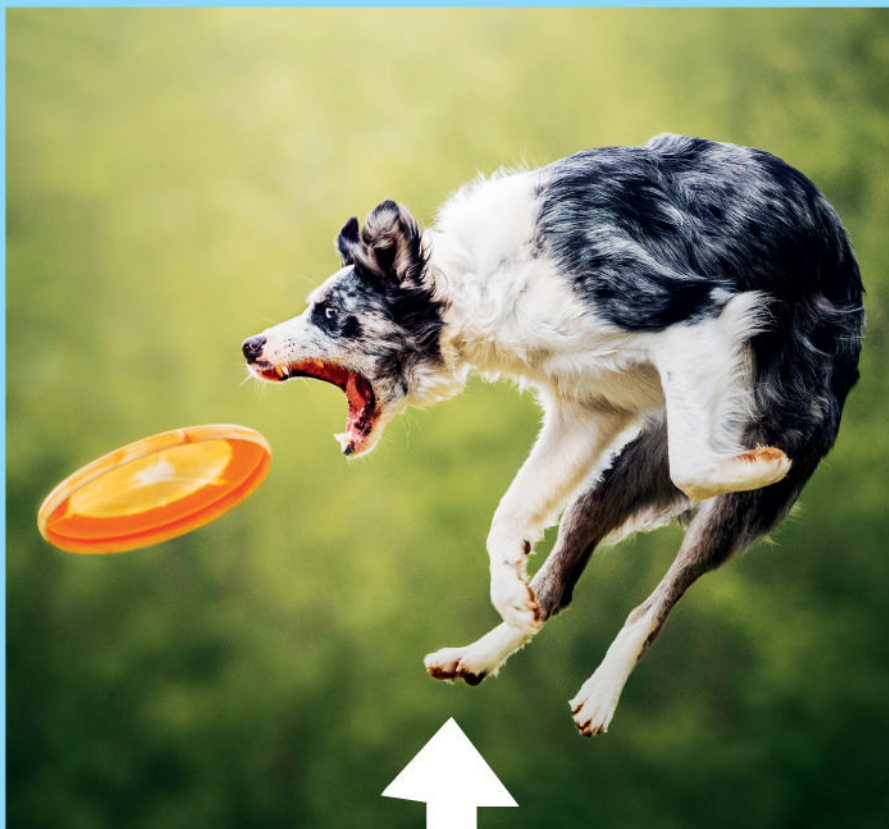
OPEN WIDE

This comical pelican appears to be putting on a show for an audience of fellow pelicans, balancing and juggling its dinner. This species, the Dalmatian pelican, is called the 'curly-headed' pelican because it looks like it's wearing a curly wig! It is one of the largest living bird species, with a wingspan of up to 3.5 metres.



NIKON COMEDY WILDLIFE AWARDS/
OLI KONECNA





CATCH IT IF YOU CAN!

What a jump! This Border Collie, named Skylar, is poised to catch a Frisbee mid-air. The record for the longest Frisbee throw caught by a dog is 122 metres, set by a dog called Davy Whippet in 2012.

DOG PHOTOGRAPHY AWARDS 2025/GRACE FIESELMAN



HOLY ROLLER

Kiruna Church in Sweden, pictured here on a huge steel transporter, was moved three miles within the city of Kiruna. It was in danger of being damaged by mining activity in the area. The epic journey to move the 670-tonne building took two days, moving at 500 metres an hour. Signs, lamp posts and even a bridge had to be moved to make way!



Eureka!

The latest astonishing discoveries, inventions and scientific breakthroughs.

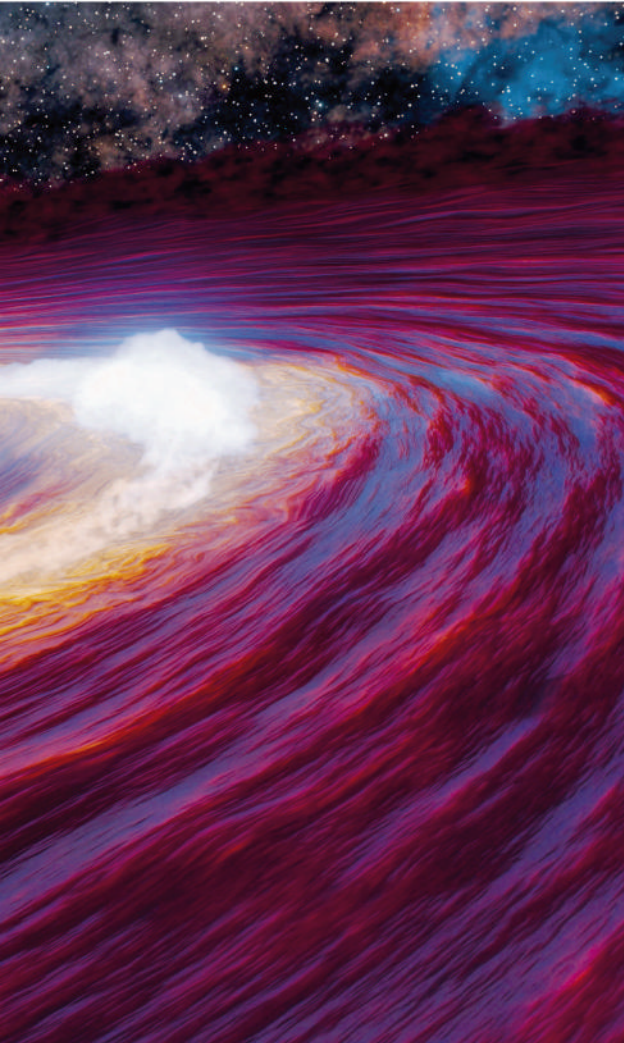
Black hole destroys a star!

Astronomers have spotted the brightest and most distant black hole flare ever seen. This type of flare can only be caused by thing – the black hole ripping apart and devouring a massive star!

The flare was first detected in 2018, but it was so bright that scientists assumed it was relatively nearby (in space terms, that is). But in 2023 they discovered that the flare was actually 20 billion light-years away. That means it was 30 times brighter than any similar flare ever recorded, and that the huge star torn apart by the black hole was at least 30 times as massive as our Sun – and possibly even bigger!



Switzerland is hoping to have the art of yodelling, a unique style of singing that originated in the mountains, added to UNESCO's cultural heritage list. UNESCO is part of the United Nations and keeps lists of places and cultural traditions that are very important and should be protected. Yodelling has been part of Swiss cultural life for 500 years. As part of Switzerland's plan, specialist teachers will begin teaching yodelling in primary schools!



Why birds sing at dawn

If you've ever been woken at dawn by birdsong (whether you enjoyed it or not!) you might have wondered why birds sing so loudly in the morning.

Scientists studying zebra finches have solved part of this mystery – they found that birds wait all night for the chance to sing again. Birds have

a biological need to sing that is suppressed during the night. When it gets light, they burst into song.

Scientists tested this using artificial light. When 'sunrise' was artificially delayed, the birds sang louder when it got light. After shorter periods of darkness, their singing was quieter.

Put a sock in it!



A 'mega-city' of spiders!

This web is home to

100,000 spiders!

Inside a cave on the Greece-Albania border, researchers have discovered the world's largest known spider web. They are calling it an arachnid 'megacity' – and with good reason! The massive 100-square-metre web is home to an estimated 100,000 spiders from at least two different species. This is the first time a web has been known to be built by more than one species of spider. Scan the QR code to get a close-up view of their wondrous web – if you dare!





How to chat...

ALLIGATOR

By Dr Nick Crumpton
Illustration by Adrienne Barman

IEI-UO
(Hi Mum!)

This cute squeak is made
by a gator baby calling
to its mum. They even
start making it while
still inside their eggs.

HRRRRRRR
(I'm THIS big!)

Reptiles aren't the chattiest of animals.
But if you come face to toothy snout
with an American alligator, it might be
wise to have these phrases handy!

DID YOU KNOW?

American alligators were
once an endangered
species but there are
now millions in
the wild!

HHHUSSSSS

(Get away from my babies!)

If you hear this hiss,
look for the nearest
tree and run...

UMMMBLE

HHHUSSSSS

(You don't scare me!)

You might see this
noise as well as hear
it. Male alligators
make these loud,
deep rumbles
by vibrating their
bodies. This makes
the water splash
and dance off
their backs.

WORLD UP!

Your guide to the wonderful world of languages and linguistics.

THIS MONTH: Limericks!

By Alison Eldridge, Illustrations by Susanna Hickling

If you spend all your time analysing verbs, nouns, prepositions and grammar, you might think that the study of languages and linguistics is a very serious business. But there are many fun ways that you can play with language without getting tangled up in the details of how it works. Poetry is a great example of how writers can

play with language. All known languages have poetry, and that poetry comes in many forms. In Japanese, for instance, a type of poem known as a haiku depends on the number of syllables in each line, rather than using rhyming (when two words have the same sound at the end, like 'moon' and 'balloon') or meter (the rhythm that

comes from the stress on syllables) as English poetry does. Signed languages have poetry, too!

One of the most fun types of poetry in English is the limerick. Let's look at how limericks work – and then invent your own!

DID YOU KNOW?

The earliest known poem with an AABBA rhyming scheme was written by St Thomas Aquinas in the 1200s.

RHYTHM

It has a special rhyme and bouncing sort of rhythm that makes limericks so fun to say.

A circus performer named Brian
once smiled as he rode on a lion.
They came back from the ride
But with Brian inside
And the smile on the face of the lion.

RHYME SCHEME

Limericks are made up of five lines. They have an AABBA rhyme scheme, which means that the first, second and fifth lines rhyme at the end, and the third and fourth lines have a different rhyme at the end.

PUNCHLINE

Most limericks are funny and many of them have a punchline like a joke, or have a funny or unexpected twist at the end. Sometimes limericks are turned into funny songs. Often, the beginning of the limerick will introduce a character who then does or says something funny.



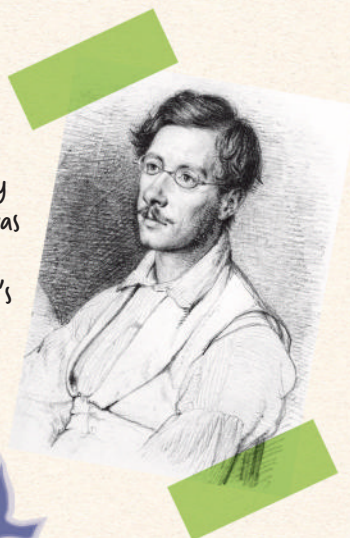
EDWARD LEAR

Edward Lear (1812–1888) was a Victorian artist, traveller and poet who made limericks famous. His *A Book*

of Nonsense (1846) collected dozens of funny five-line verses with his own doodly illustrations. Lear didn't invent

limericks, but he popularised their playful 'nonsense' style, with odd characters, surprising rhymes and a funny

punchline. Many begin, 'There was an old Man...', a formula Lear's poems helped to make popular.



There was a Young Lady whose bonnet,
Came untied when the birds sat upon it;
But she said: 'I don't care!
All the birds in the air
Are welcome to sit on my bonnet!'



There was an old man called Keith
Who mislaid his set of false teeth
They'd been left on a chair
He'd forgot they were there
Sat down – and was bitten beneath!

NOW YOU TRY!

Send your best limericks to letters@whatonearthmag.com for a chance to be featured in a future edition of the magazine and win a copy of the book *Listified!*. If you're stuck for a topic, you could even try writing a limerick about What on Earth! Magazine.





18

24 AUGUST

It's 20 years since **Pluto** was reclassified as a dwarf planet, sparking a debate that continues today.

19

5 SEPTEMBER

The Muppet Show

– featuring Kermit the Frog, Miss Piggy and other funny puppets – turns 50.



20

14 OCTOBER

The lazy, honey-loving bear **Winnie-the-Pooh** was created by author A.A. Milne 100 years ago today.

8

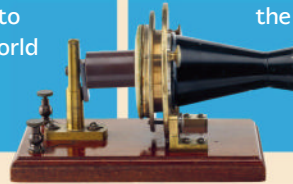
6 MARCH

The **Winter Paralympics** bring together athletes with disabilities to compete on the world stage in Italy.

9

10 MARCH

It's 150 years since inventor Alexander Graham Bell made the world's first ever **telephone call**.



7

FEBRUARY

It's 50 years since the **Concorde** aeroplane first zoomed passengers at twice the speed of sound.



26 THINGS TO KNOW ABOUT 2026

17

20 JULY

It's 50 years since NASA's **Viking 1** became the first spacecraft to land on the planet Mars. It searched for evidence of life (none found yet!).

6

20 FEBRUARY

The **Mir space station** launched 40 years ago, becoming humanity's first long-term home in space.



5

6 FEBRUARY

The **Winter Olympics** begin in Milan, Italy, showcasing a variety of athletic events on snow and ice.

4

3 FEBRUARY

Pixar Studios celebrates 40 years. The company behind *Toy Story* and *Cars* changed the world of movie animation.



16

4 JULY

The **USA** celebrates 250 years since declaring independence from Britain in 1776.

21

28 OCTOBER

The **Statue of Liberty** has been welcoming immigrants to New York, USA, since 1886.



22

31 OCTOBER

The Dakar 2026 **Youth Olympic Games** showcase the next generation of sporting stars in Senegal.



10

16 MARCH

It's 100 years since physicist Robert Goddard launched the world's first **liquid-fuelled rocket**.

11

1 APRIL

Apple – the technology company that created the iPhone and iPad – is 50 years old today.



23

11 NOVEMBER

America's most famous highway, **Route 66**, which stretches from Chicago to California, is 100 years old.

1

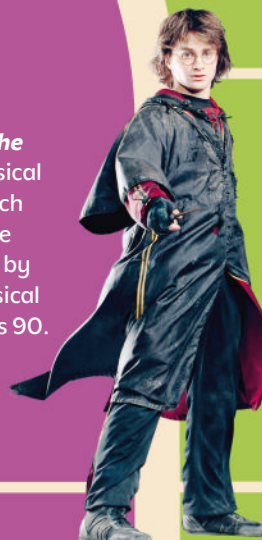
15 JANUARY

Wikipedia turns 25. The free online encyclopedia is now available in more than 300 languages.

12

2 MAY

Peter and the Wolf, the musical story in which animals are represented by different musical instruments, is 90.



24

4 NOVEMBER

Harry Potter and the Philosopher's Stone turns 25, and will be back in cinemas to celebrate.

2

26 JANUARY

It's 100 years since inventor John Logie Baird's first public demonstration of the **television**.



13

8 MAY

Coca-Cola, the fizzy drink invented by a pharmacist in 1886, celebrates 140 years.

25

10 NOVEMBER

Trivial Pursuit, the trivia board game with colourful plastic wedges, launched on this day in 1981.

3

27 JANUARY

Wolfgang Amadeus Mozart was born on this day in 1756. He started composing aged five.



15

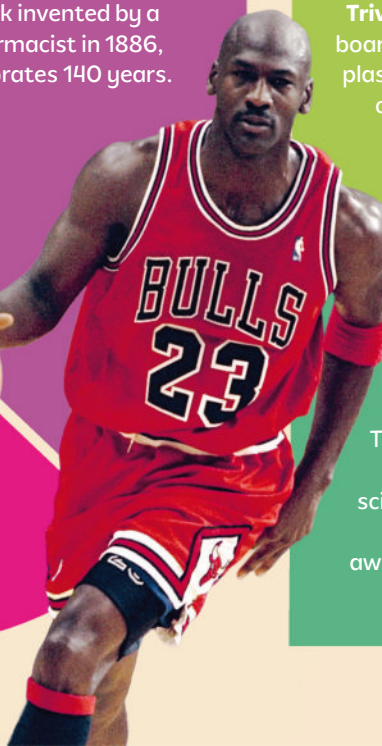
11 JUNE

The **FIFA World Cup** kicks off in North America, hosted by the USA, Canada and Mexico.

14

6 JUNE

The **NBA** turns 80, celebrating eight decades of slam dunks and thrilling basketball moments.



26

10 DECEMBER

The **Nobel Prizes** for achievements in science, literature and peace were first awarded 125 years ago.

DID YOU KNOW?

Canada has a postal code for the North Pole: HOH 0H0, a nod to Santa Claus's iconic laugh!

SKIING IN FOR A LANDING!

There are no airports or runways at the North or South Pole. This Lockheed LC-130 is a special type of aeroplane equipped with skis so it can land safely on Arctic and Antarctic ice. It also has rocket boosters for snowy take-offs!



AMUNDSEN-SCOTT SOUTH POLE STATION

This American research station sits right at 90°S latitude at the South Pole. About 150 scientists and support staff spend the entire winter there in almost total darkness. The station is built on stilts that can be raised as snow piles up underneath.



Set off on an epic adventure to Earth's frozen poles to discover how explorers brave these harsh, icy environments. Plus, meet the animals that have adapted to live and thrive in these frozen worlds.

Get your blankets and cocoa ready, because we're off on a chilly quest to the coldest places on Earth: the frozen Arctic at Earth's North Pole and vast Antarctica at the South Pole.

You may think that the North and South Poles are very similar places. And of course they do share some things in common: both are frozen lands of ice and snow, and explorers raced to reach each pole in the early 20th century (see pages 20 and 24 for details of these famous expeditions). They are also home to animals that have adapted to extremely cold temperatures and

snowy terrain (see page 22). But the poles are actually far more different than you might have guessed.

One of the biggest differences between the poles is that the North Pole is on an ocean surrounded by land (and sea ice), while the South Pole is on land (the continent of Antarctica) surrounded by ocean. In fact, permanent research stations can operate at the South Pole because the land is stable, but at the North Pole there are only drifting stations because it sits in constantly shifting sea ice. This also makes it hard to know exactly where the pole is located



Above: visitors in a small boat sail past a giant iceberg in Antarctica.

– there is nowhere to plant a flag! Another key difference is that the South Pole is much colder.

Both poles are cold because they receive very little direct sunlight. But Antarctica is king of cold because its icy land is higher above sea level. The coldest temperature ever recorded in Antarctica was a bone-chilling -89.2°C at Russia's Vostok research station.

If you had the chance, which pole would you visit? Turn the page to discover what it takes to be a polar explorer – and then meet some of the wildlife you might encounter along the way...

FROSTY FACTS ABOUT THE POLES

- ❖ Each pole has six months of light and six months of darkness due to the Earth's tilt as it orbits the Sun. At the North Pole it is light from March to September and dark from September to March – the South Pole is the opposite.
- ❖ The Arctic is home to around 4 million people, whereas the South Pole has no permanent human residents – only visiting scientists (and lots of penguins!).
- ❖ Neither pole belongs to a single country. The Arctic region is coordinated by the Arctic Council, and Antarctica is governed by a treaty signed by 58 nations that share responsibility.
- ❖ The location of the South Pole is marked with a stake, but it has to be moved because the Antarctic ice shifts about 10 m per year. A titanium flag was planted by Russian scientists on the ocean floor at the North Pole.

YOUNGEST PERSON AT THE SOUTH POLE

Lewis Clarke from the UK, right, became the youngest person to ski to the South Pole in January 2014. He was 16 years and 61 days old, and had skied 1,123 km to reach his epic destination!



THE LAND WHERE GLACIERS ARE BORN

Glaciers begin as thick layers of snow building up over thousands of years. The weight squeezes the snow into solid ice that slowly flows outwards, forming huge, creeping rivers of ice.



Race to the

NORTH POLE

FREDERICK COOK EXPEDITION 1907–1908

Frederick Albert Cook was an American medical doctor and experienced polar explorer who claimed to be the first person to reach the North Pole.

In July 1907, Cook sailed to Greenland, establishing a base at Annoatok, 700 miles from the Pole. In February 1908, he set off with 11 sledges, 103 dogs and nine Inuit helpers. As they travelled north through Ellesmere and Axel Heiberg islands, Cook gradually

reduced the size of his group. For the final leg, only two Inuit men – Ahwelah and Etukishook – accompanied him. Cook later claimed they reached the North Pole on 21 April 1908. However, drifting ice blocked their return route, forcing them to spend the winter in a cave on Devon



Left: Cook's expedition team.
Below: Cook and one of his Inuit helpers built an igloo at what he claimed was the North Pole.



Island. Cook wasn't able to return to civilisation to announce his claim until September 1909.

Almost immediately, Robert Peary – who also claimed to have reached the Pole, in April 1909 (see below) – declared that Cook was not telling the truth. Cook's

Inuit companions gave different accounts of where they had travelled. When the University of Copenhagen examined the limited records of Cook's journey, they ruled that his claims were 'not proven'. Today, most historians believe that Cook did not reach the North Pole.





DID YOU KNOW?
Each year, there is only one sunrise and sunset at the North Pole. In between them, the Sun is always in the sky!

ROBERT PEARY EXPEDITION 1908-1909

Robert Peary (below) was an American naval engineer and explorer who claimed to be the first person to reach the North Pole. In July 1908, Peary set sail for his fourth and final attempt. His earlier expeditions in 1898, 1902 and 1906 had all fallen short. Peary had even lost several toes to frostbite in the freezing conditions. On 1 March 1909, Peary left Cape Columbia with a large team using his 'Peary system' in which support

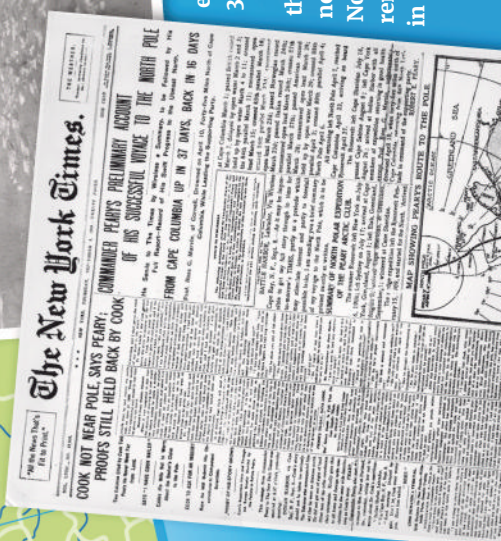


teams laid supplies ahead before gradually turning back. Only six men continued for the final dash to the Pole. Peary claimed they reached the North Pole on 6 April 1909. When Peary returned to civilisation, he

discovered that Frederick Cook (see above) had announced his own claim just days earlier. However, because of doubts about Cook's story, Peary's claim was officially recognised in 1911. Years later, modern analysis of



Left: Peary and his team. Below: a newspaper reporting on Cook and Peary's rival claims.



Peary's navigation records suggests he didn't make it all the way either, stopping perhaps 30 to 60 miles short. Today, most experts think that neither Cook nor Peary reached the true North Pole, though they remain famous figures in polar exploration.

Musk ox

Shaggy musk oxen have a special underlayer of wool called qiviut (KIV-ee-uht) to stay snugly warm. It even grows inside their noses!



Snowy owl

Snowy owls have thick feathers to survive in freezing temperatures. In fact, all those thick feathers make them one of the heaviest owl species on Earth.



Arctic tern

This bird has the longest migration of any animal. Terns also live long for little birds, 20–30 years. A tern can travel up to 1.5 million miles in its life!



Wandering albatross

The wandering albatross is one of the world's biggest birds. It has the largest wingspan of any bird alive today, reaching about 3.5 metres across!



Reindeer

This is the only species of deer where both males and females can grow antlers. Those antlers may have as many as 441 points, called tines.



Southern rockhopper penguin

Instead of sliding on their bellies like other penguins, rockhoppers jump and hop over boulders and across cracks in the rocks.



Moose

Its antlers can spread up to 2 m across, which is taller than an adult human. An adult moose can eat 30 kg of food a day.



Emperor penguin

The largest penguins and deepest-diving birds on Earth. Emperor penguins can stay underwater for 20 minutes!



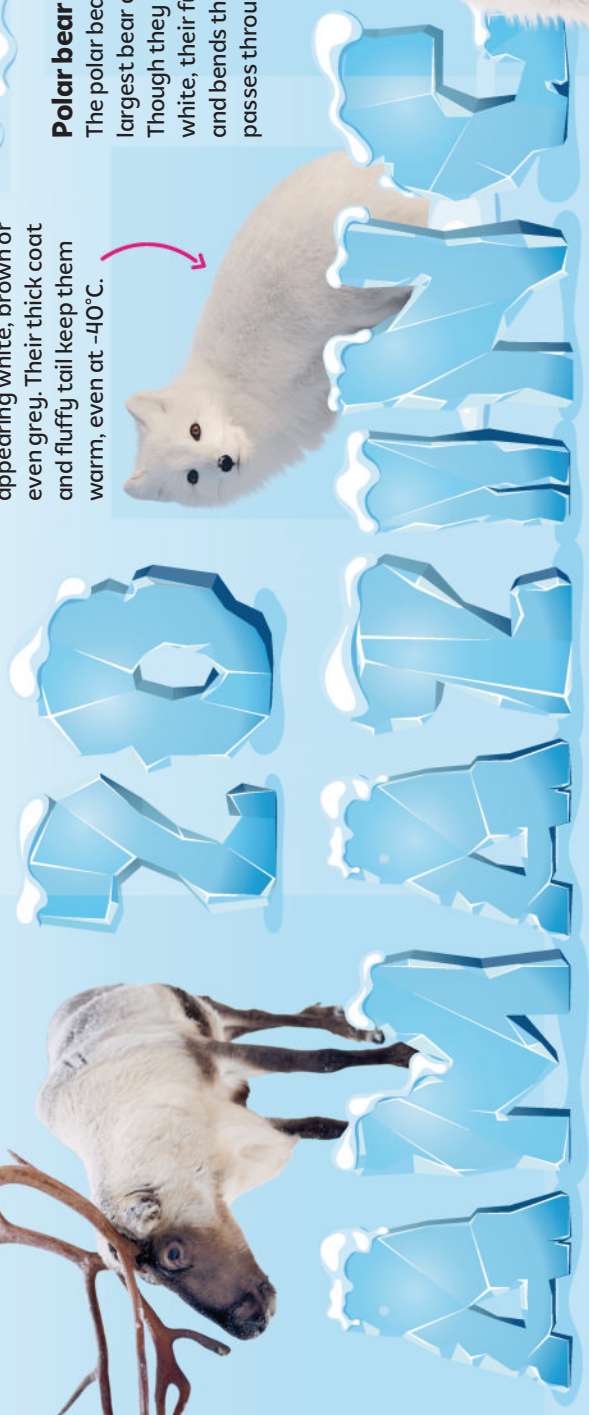
Arctic fox

These hardy foxes change colour with the seasons, appearing white, brown or even grey. Their thick coat and fluffy tail keep them warm, even at -40°C .



Polar bear

The polar bear is the largest bear on Earth. Though they may look white, their fur is clear and bends the light that passes through it.



From thick-furred foxes and rockhopping penguins to deep-diving whales, meet the animals built for life in the planet's coldest places. Discover how their superpowers, from natural antifreeze to colour-changing coats, help them survive at the icy poles.

KEY

N Found in the Arctic **S** Found in the Antarctic



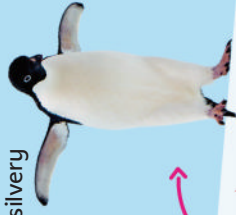
Walrus **N**

Walrus are known for their long tusks, which keep growing throughout their lives. Tusks help them break ice and haul their bodies onto land.



Harp seal **N**

These seals spend most of their lives at sea, coming ashore mainly to breed. Their pups are white, turning silvery as they grow.



Adélie penguin **S**

These penguins are small, yet mighty. They have been spotted scaring off much larger animals by puffing up and fiercely flapping their flippers!



Leopard seal **S**

Leopard seals are large (around 3.5 m long) and powerful predators of the polar seas. They eat penguins, other seals, seabirds, fish and squid.



Puffin **S**

Puffins are both superb swimmers and fantastic flyers – they can flap their wings up to 400 times a minute, reaching speeds of nearly 90 km/h.



Humpback whale **N** **S**

These mighty whales are famous for songs that can last for as long as 30 minutes. They have the widest range of sounds of any animal.

Antarctic fur seal **S**

Unlike most seals, which have a layer of fat called blubber to keep warm, fur seals rely instead on thick, dense fur.



Crocodile icefish **S**

These unusual fish have almost clear blood and produce their own antifreeze to keep swimming in icy seas.



Narwhal **N**

With their long, spiral tusks, narwhals are often called 'unicorns of the sea'. Those tusks are actually extremely long teeth!



Orcas **N** **S**
Although orcas are often called killer whales, they are actually part of the dolphin family. But they are dangerous, and can prey on whales twice their own size.



Race to the

POLE

ROALD AMUNDSEN EXPEDITION 1910–1912

Roald Amundsen was a Norwegian explorer who became the first person to reach the South Pole.

Originally intending to reach the North Pole, Amundsen secretly changed his plans when Frederick Cook and Robert Peary claimed it first (see page 20). Amundsen set sail in June 1910, revealing his Antarctic plan only at the final port. He sent a telegram to his rival Robert Falcon Scott: 'Proceeding Antarctic.'

On 19 October 1911, Amundsen and four

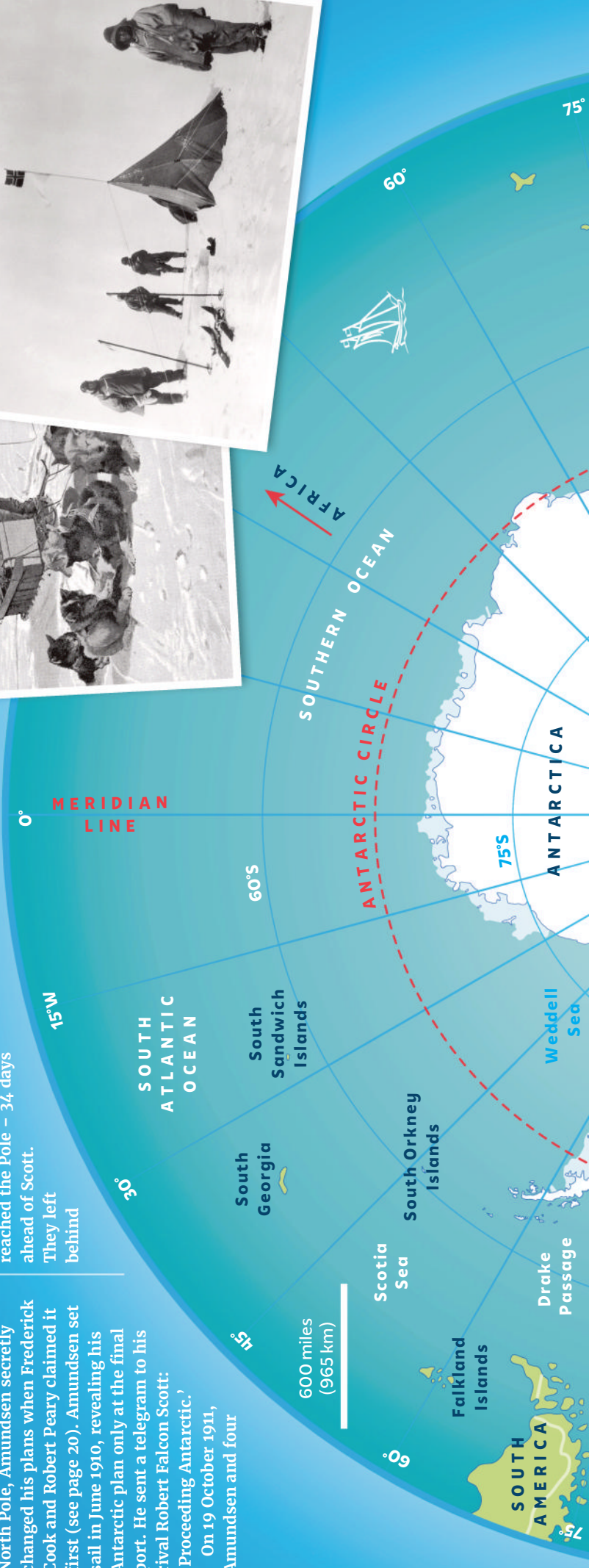
other men set off for the Pole with 52 Greenland dogs. Their success was due to detailed planning.

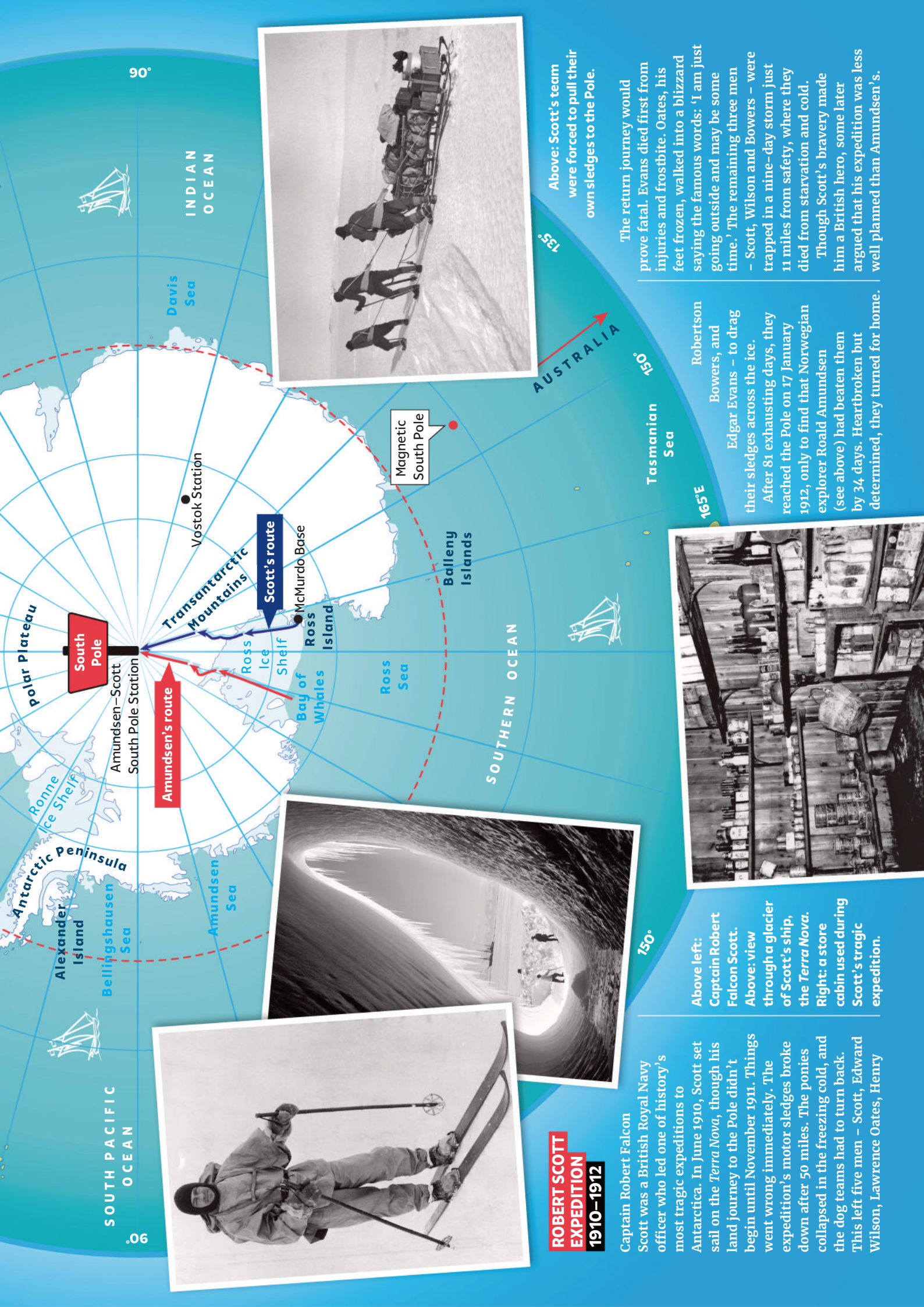
Amundsen had already learned Arctic survival skills from the Inuit people. His team wore Inuit furs and used expert dog teams.

On 14 December 1911, they reached the Pole – 34 days ahead of Scott. They left behind

a tent with the Norwegian flag and a letter for Scott to deliver to Norway's king, confirming their achievement in reaching the Pole first. All five returned safely on 25 January 1912.

Left: Roald Amundsen became the first person to reach the South Pole. Below: Robert Falcon Scott's team reached the Pole just 34 days later, where they found Amundsen's tent.





90°

INDIAN OCEAN

Davis Sea

polar Plateau

SOUTH PACIFIC OCEAN

06



ROBERT SCOTT EXPEDITION 1910-1912

Captain Robert Falcon Scott was a British Royal Navy officer who led one of history's most tragic expeditions to Antarctica. In June 1910, Scott set sail on the *Terra Nova*, though his land journey to the Pole didn't begin until November 1911. Things went wrong immediately. The expedition's motor sledges broke down after 50 miles. The ponies collapsed in the freezing cold, and the dog teams had to turn back. This left five men – Scott, Edward Wilson, Lawrence Oates, Henry



150°

Above left: Captain Robert Falcon Scott. Above: view through a glacier of Scott's ship, the *Terra Nova*. Right: a store cabin used during Scott's tragic expedition.



Robertson Bowers, and Edgar Evans – to drag their sledges across the ice. After 81 exhausting days, they reached the Pole on 17 January 1912, only to find that Norwegian explorer Roald Amundsen (see above) had beaten them by 34 days. Heartbroken but determined, they turned for home.

135°

AUSTRALIA

Tasmanian Sea

165°E



Above: Scott's team were forced to pull their own sledges to the Pole.

The return journey would prove fatal. Evans died first from injuries and frostbite. Oates, his feet frozen, walked into a blizzard saying the famous words: 'I am just going outside and may be some time.' The remaining three men – Scott, Wilson and Bowers – were trapped in a nine-day storm just 11 miles from safety, where they died from starvation and cold. Though Scott's bravery made him a British hero, some later argued that his expedition was less well planned than Amundsen's.

The return journey would

prove fatal. Evans died first from injuries and frostbite. Oates, his feet frozen, walked into a blizzard saying the famous words: 'I am just going outside and may be some time.'

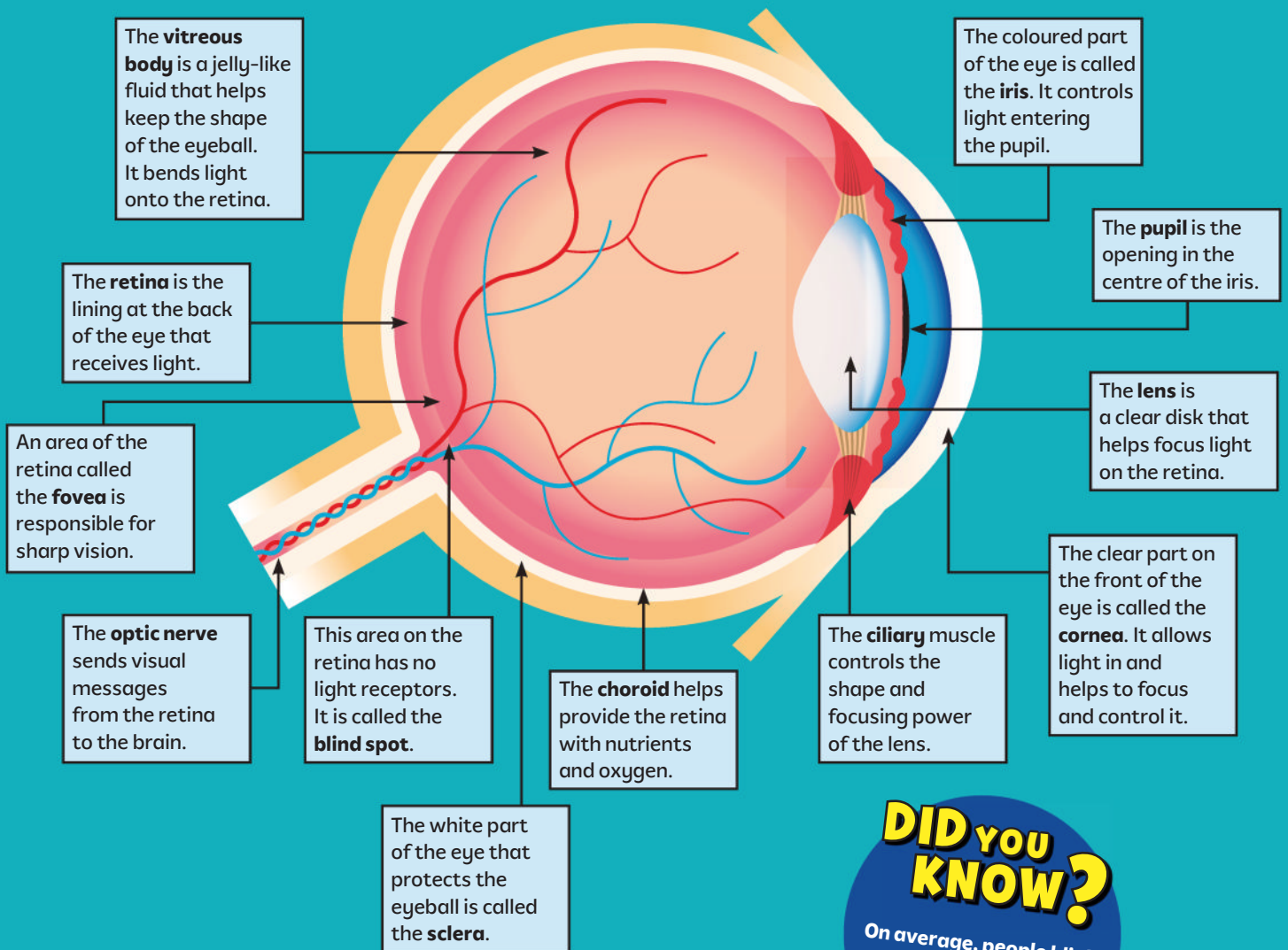
The remaining three men – Scott, Wilson and Bowers – were trapped in a nine-day storm just 11 miles from safety, where they died from starvation and cold.

Though Scott's bravery made him a British hero, some later argued that his expedition was less well planned than Amundsen's.

HOW THE EYE WORKS!

The eye is an amazing organ that can detect objects and see up to 10 million colours. When you look at an object, light reflects off it and enters your eyes. The light travels to the retina at the

back of each eye. Millions of nerve cells, called rods and cones, convert the light into electrical signals, which travel to the brain, where they are converted into an image of what you are looking at.



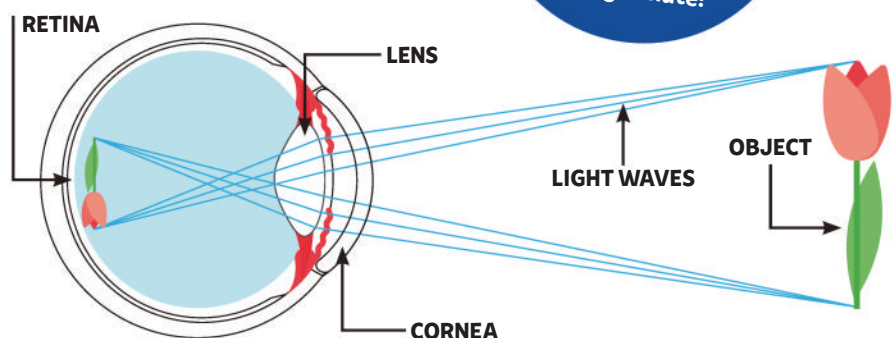
DID YOU KNOW?

On average, people blink their eyes between 15 and 20 times every minute!

TURNING THE WORLD UPSIDE-DOWN

When light from an object passes through the eye's cornea and then the lens, the lens bends it – just like a camera lens – projecting an **upside-down image** onto the retina. Retinal

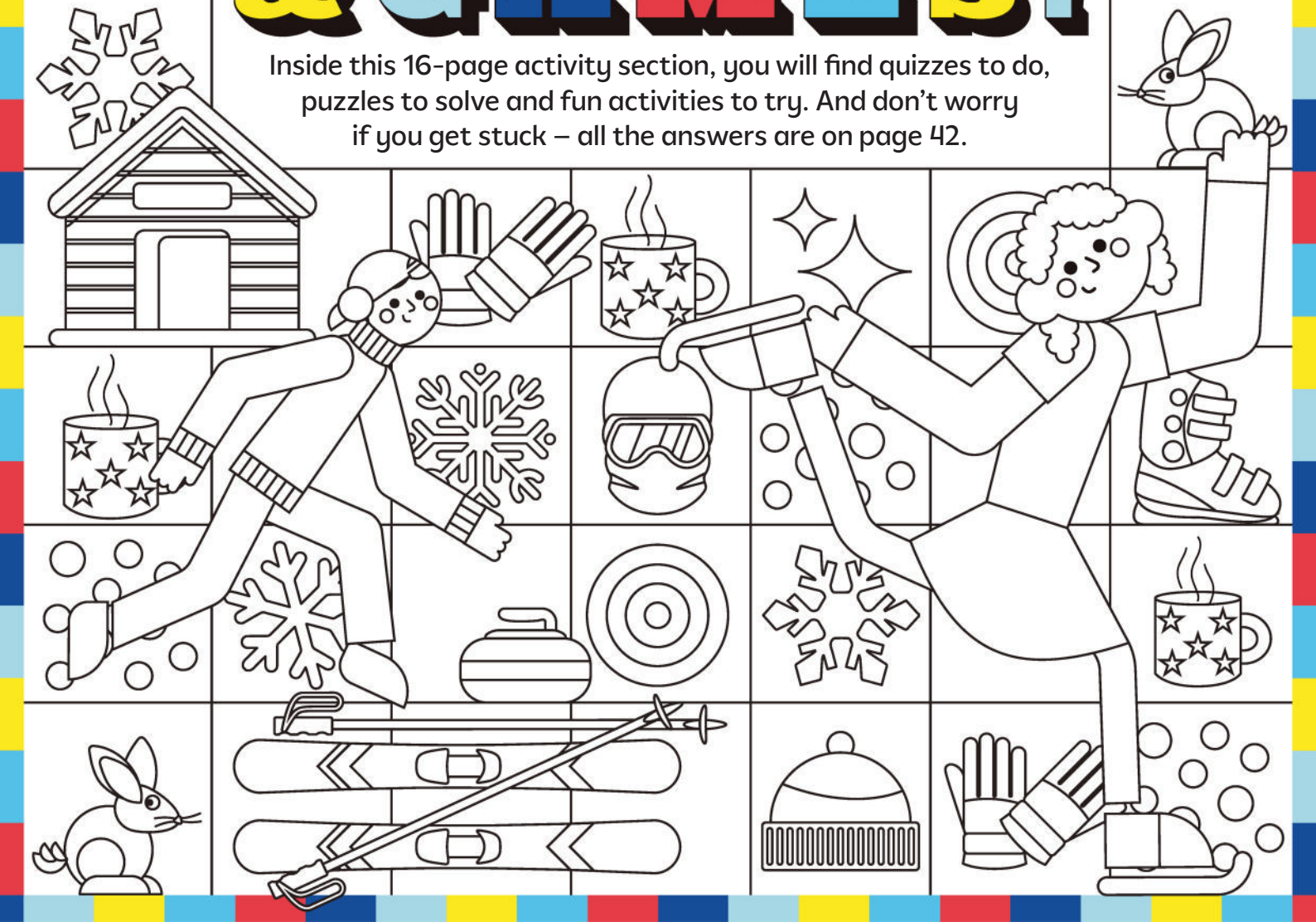
cells convert this upside-down image into electrical signals. The brain has learnt to reinterpret these signals to create the **right-side-up image** you perceive.





PUZZLES & GAMES!

Inside this 16-page activity section, you will find quizzes to do, puzzles to solve and fun activities to try. And don't worry if you get stuck – all the answers are on page 42.



ANIMALS

1 There are two kinds of mammals that lay eggs. The platypus is one. What is the other?

- a. Dolphin
- b. Hedgehog
- c. Echidna
- d. Okapi

2 Birds' eggs come in a variety of shapes and sizes, from giant ostrich eggs to tiny hummingbird ones. They also come in all of these colours except which one?

- a. White
- b. Black
- c. Green
- d. Bright yellow

3 What is the term for a baby goat?

- a. A kid
- b. A joey
- c. A cub
- d. A lamb



4 Cockroaches are some of the most resilient animals on Earth. How long can a cockroach live without a head?

- a. 3 minutes
- b. 3 hours
- c. 3 days
- d. 3 months

5 With an estimated maximum age of 15,000 years, what are thought to be the longest-living animals on Earth?

- a. Giant tortoises
- b. Blue whales
- c. Crocodiles
- d. Glass sponges



WORD LADDERS

Change the word HEAD to FIRE in 4 moves by changing one letter at a time. Each new word you create by changing a letter must be a proper word. Then try changing BITS to MAKE and SANE to CORK.

HEAD	BITS	SANE
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
FIRE	MAKE	CORK





HUMAN BODY

1 Some organs, such as the brain and heart, are essential for life. Which of these organs can humans survive without?

- a. Spleen
- b. Stomach
- c. Appendix
- d. All of the above

2 How many universal facial expressions have scientists recognised?

- a. 3
- b. 4
- c. 7
- d. 10

3 People used to believe that kissing a donkey could help to take away the pain of what kind of ailment?

- a. Tummy ache
- b. Toothache
- c. Backache
- d. Headache



4 The nervous system is made of the brain and spinal cord. Where is the enteric nervous system – often called the ‘second brain’?

- a. In the gut
- b. In the kidneys
- c. In the legs
- d. In the heart

5 What part of the brain controls body movements and helps you to both keep your balance and move smoothly?

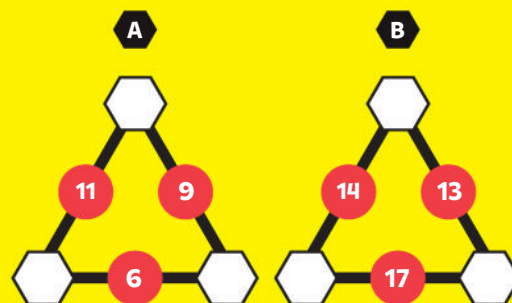
- a. Cerebrum
- b. Brainstem
- c. Cerebellum
- d. Hypothalamus

NUMBER TRIANGLES

In the triangles below, the numbers inside the red circles are the sum of the two numbers in the connected white hexagons. For example:

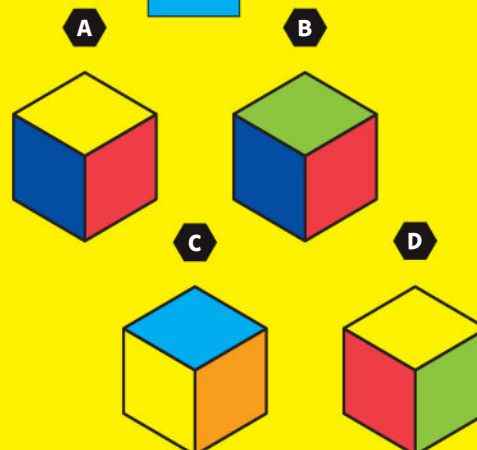
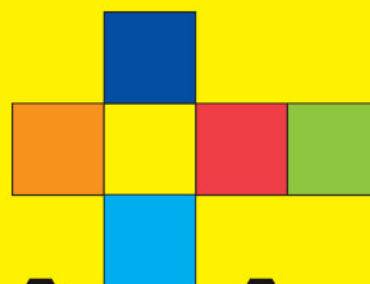


Can you work out which number should appear in each of the hexagons? All the numbers in the hexagons are between 1 and 10 and a number can only be used once in each of the triangles.













CUBE IT!

The six-sided shape on the top can be folded up to form a cube. Only two of the cubes below can be made by it. Which are they?



EMOJI IDIOMS

Each of the four emoji sequences below represents a common phrase. Can you work out which phrase it is in each example?

- A  
- B    
- C  
- D  

SUDOKU

Fill all the empty squares so that every row, column and 3x2 box contains each of the numbers 1 to 6.

A

3	2	6			1
5					2
		1			
2			6	1	4
	5		1		6
		2		3	

B

6				1	4
	4	1		2	
1	3		4	5	
4		5			6
2	1				3

PICTURE QUIZ

Can you work out what you are looking at in each of these six photos?



1

2



4



6





3



5



FUTOSHIKI

Fill in the missing numbers so that every row and column includes the numbers 1, 2, 3 and 4. Use the inequality signs as clues and make sure numbers always obey the inequality sign between them. This means that the arrows between the numbers always point towards the smaller number.

Here is an example:



In the three squares shown above, the number A must be less than 3 and greater than the missing number B. We know all the numbers must be between 1 and 4, so therefore A must be 2 and B must be 1.

A

<input type="text"/>	<input type="text"/>	<	<input type="text"/>	<input type="text"/>
<input type="text"/>	2		<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>		<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>		>	<input type="text"/>

B

<div></div>	<div></div>	<div></div>	<div></div>	
	▼	▲		
<div></div>	<div></div>	➡	<div></div>	
<div></div>	<div></div>		<div></div>	
<div></div>	<div></div>		<div></div>	
<div></div>	➡	<div></div>	◀	<div></div>



GEOGRAPHY

1 Which of the seven continents has the most countries – currently 54 fully recognised by the United Nations?

- a. Africa
- b. Asia
- c. Europe
- d. South America

2 Which river flows through Paris?

- a. The Seine
- b. The Rhine
- c. The Thames
- d. The Amazon

3 Which country has more castles?

- a. China

- b. United Kingdom
- c. Germany
- d. Russia



4 About a dozen national flags incorporate plants. What kind of leaf appears on Canada's flag, shown left?

- a. Elm
- b. Oak
- c. Maple
- d. Birch

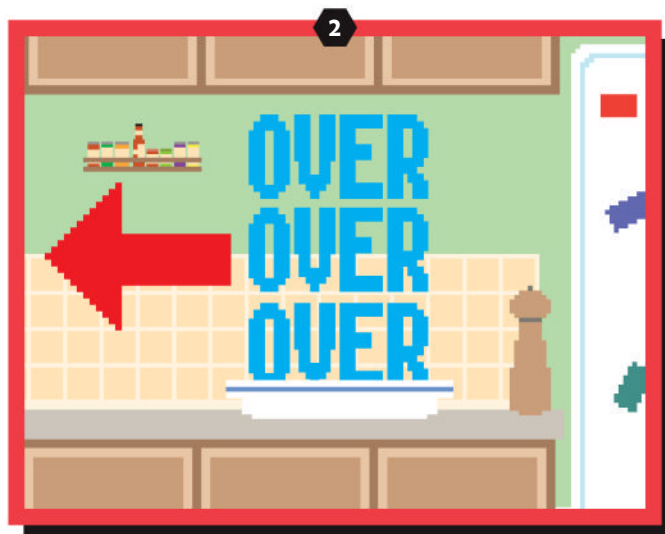
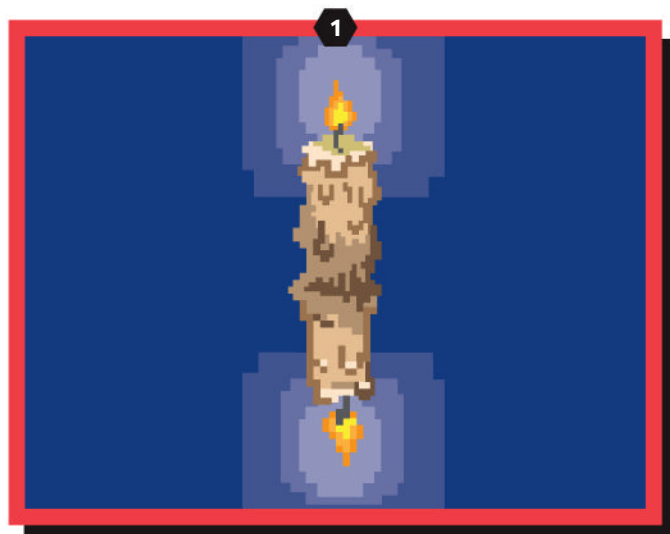
5 What is the name of the imaginary 40,000-kilometre line that divides Earth into the Northern and Southern hemispheres?

- a. Latitude
- b. Prime meridian
- c. Equator
- d. Belt line



HIDDEN PHRASES

Each of these pictures represents a common expression. Can you work out what each visual clue is trying to say?



WORD WHEEL

Use the word wheel to help find the answers to the eight clues below. All the answers contain the middle letter, and each letter can only be used once.

Clue: a large rodent with defensive spines or quills on its body and tail (9 nine letters).

Answer:

Clue: a red-brown metal that can be combined with tin to form bronze (6 letters).

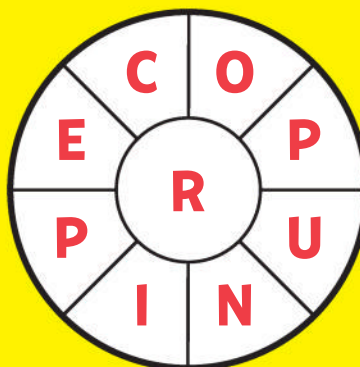
Answer:

Clue: the title given to the son of a monarch, such as a king (6 letters).

Answer:

Clue: a sharply pointed part of a crab's body that is used for feeding and defence (6 letters).

Answer:



Clue: the surname of the physicist who was the first woman to win a Nobel Prize (5 letters).

Answer:

Clue: the French word for black (4 letters).

Answer:

Clue: a cruel Roman emperor who supposedly played music while Rome burned (4 letters).

Answer:

Clue: the world's most eaten food, which serves as a staple (primary) food for more than half the global population (4 letters).

Answer:



TREASURE HUNT!

Can you spot these 20 people and things hidden in the winter scene above? Don't worry if you get stuck – all the answers are revealed on page 42.

1

2

3





Illustration by Esperanza Hicking

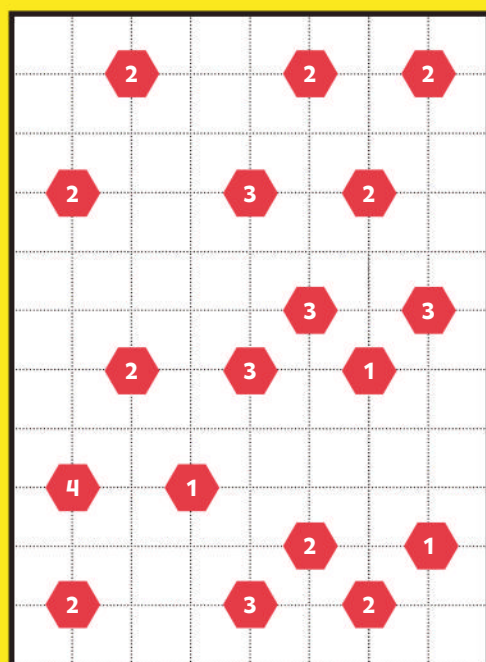
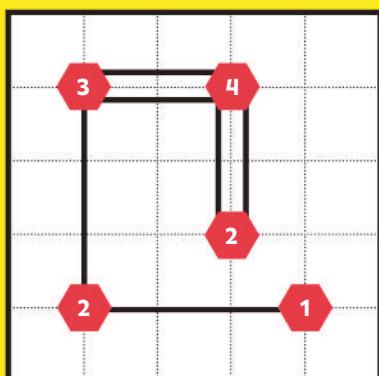


BRIDGE PUZZLE

Draw bridges between the red islands so that the number of bridges connected to each island equals the number written inside the circle.

RULES

1.
The bridges must be straight lines and cannot bend.
2.
The bridges cannot intersect with each other.
3.
The bridges can be horizontal or vertical but not diagonal.
4.
The maximum number of bridges connecting two islands is two.



HUMAN WORLD

- 1** Which Roman goddess is the wife of Jupiter and the counterpart to the Greek goddess Hera?
- a. Juno
 - b. Minerva
 - c. Venus
 - d. Ceres

- 2** Which language is the official language of Chile in South America?
- a. Portuguese
 - b. English
 - c. Spanish
 - d. Italian

- 3** Which popular card game was invented after a father and son had an argument about the rules of the card game Crazy 8s?
- a. Poker
 - b. Rummy
 - c. Go Fish
 - d. UNO



- 4** Which Indian festival usually celebrated in March is marked by throwing coloured powders and paints?
- a. Pongal
 - b. Diwali
 - c. Navratri
 - d. Holi

- 5** Which toy helped scientists to understand the flow of ocean currents?
- a. LEGO
 - b. Rubber ducks
 - c. Slinky
 - d. Kites

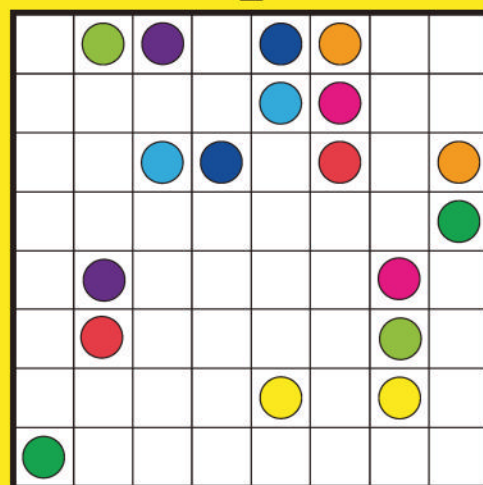




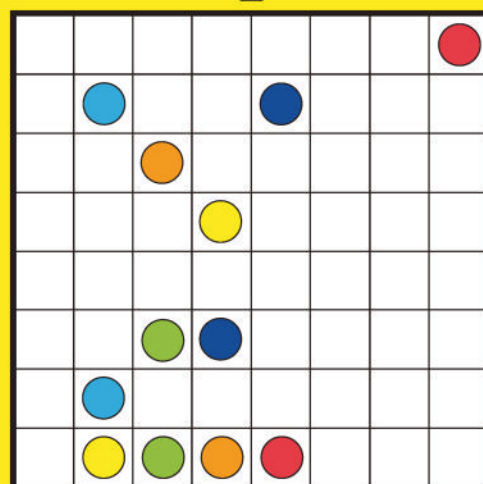
CONNECT THE DOTS

Draw a line to connect each pair of dots. You can't use diagonal lines and the lines can't cross or touch each other. You must fill the whole grid with lines but only one line is allowed in each square.

A

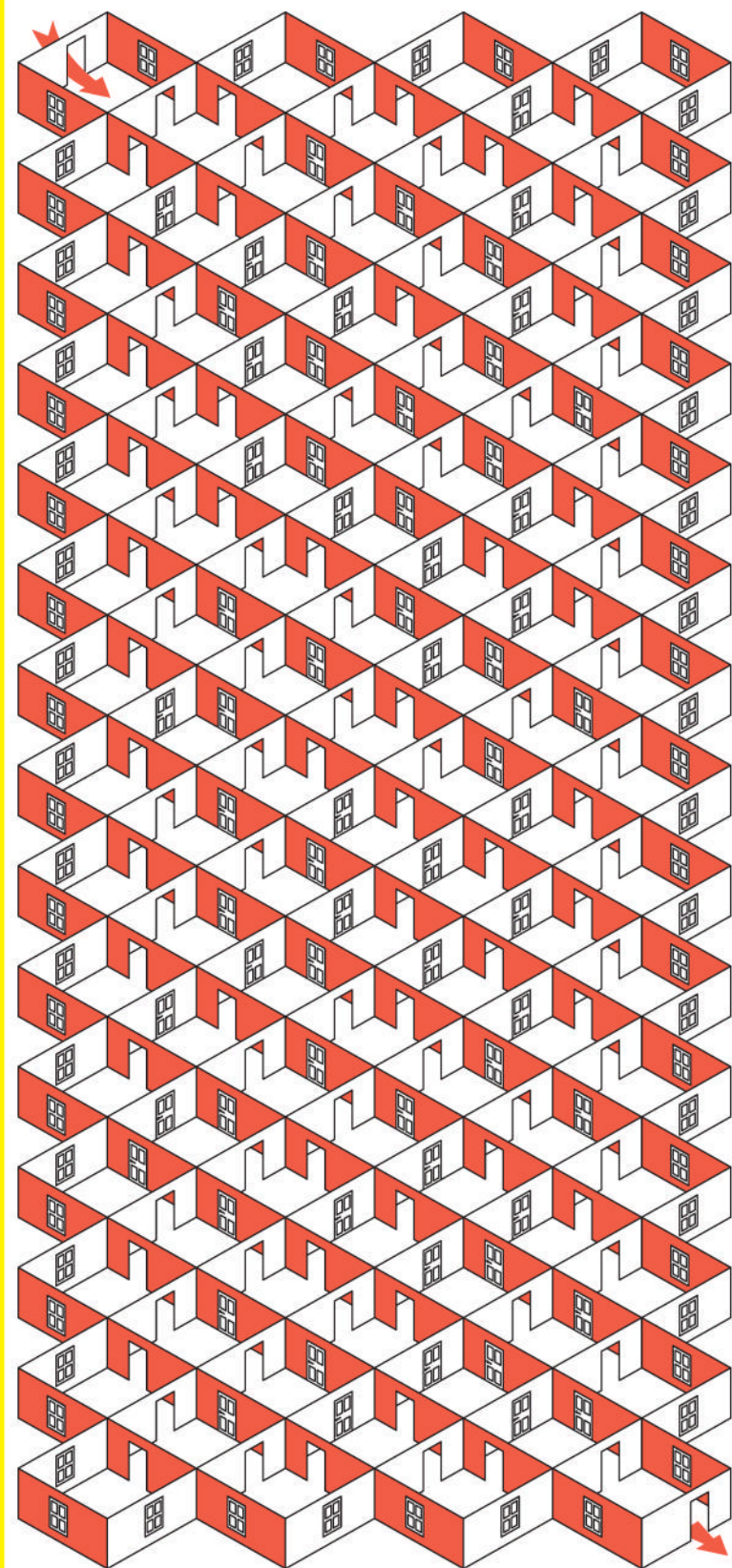


B



CHANGING ROOMS

Can you find your way through our maze of square rooms? Enter through the door marked with the red arrow, then try to find your way to the exit by going through the correct sequence of open doors. Good luck!





LUCKY DIP

1 In the popular Christmas carol 'The Twelve Days of Christmas', how many gold rings are given to the singer by their 'true love'?

- a. 3
- b. 5
- c. 7
- d. 9

2 In which European country did the Christmas tree tradition begin during the 16th century?

- a. France
- b. Norway
- c. Denmark
- d. Germany

3 What does the Hebrew word 'Hanukkah' mean?

- a. Peace
- b. Celebration
- c. Dedication
- d. Miracle



4 Which of Santa Claus's nine reindeer has a red nose? (And for a bonus point, can you name the other five reindeer?)

- a. Dasher
- b. Dancer
- c. Rudolph
- d. Blitzen

5 Which Christmas ballet features toys that come to life and a Mouse King?

- a. The Snow Queen
- b. The Nutcracker
- c. The Sugarplum Fairy
- d. Pinocchio

SPACE

1 Which of these planets doesn't have any rings?

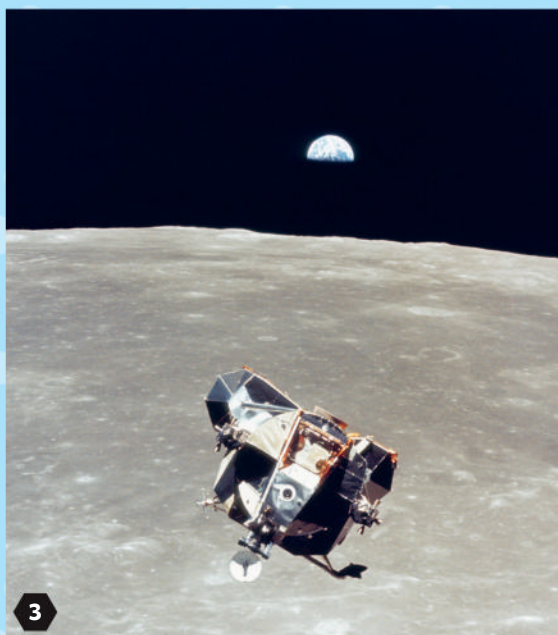
- a. Jupiter
- b. Mars
- c. Neptune
- d. Saturn

2 Who came up with the name for the dwarf planet Pluto soon after it was discovered in 1930?

- a. A panel of experts
- b. The king of Sweden
- c. The astronomer who discovered it
- d. An 11-year-old girl

3 What was the name of the Apollo 11 Lunar Module that landed the first astronauts on the Moon?

- a. Eagle
- b. Falcon
- c. Orion
- d. Challenger



4 Which of these stars is the closest star to Earth?

- a. Proxima Centauri
- b. Polaris
- c. Sirius
- d. The Sun

5 How many Earths would fit between Earth and the Moon?

- a. 2
- b. 10
- c. 20
- d. 30

LINK WORDS

A link word is a word that can be added to the end of one word and the start of another word to create two new words. For example, the word FRIEND can be added to the end of GIRL to create GIRLFRIEND, and also added to the start of SHIP to create FRIENDSHIP.

GIRL FRIEND SHIP

Can you think of link words that fill the gaps below and create two new words in each case?

BIRTH _ _ _ LIGHT

BACK _ _ _ AGE

GRAPE _ _ _ YARD

CARD _ _ _ GAME

WINTER WORD SEARCH

Can you spot the 20 words associated with winter in our jumbo word search puzzle? Good luck!

BLIZZARD	U	M	U	G	Q	M	K	T	Y	E	Z	E	W	O	J	U	R	Q	S	O
BRRR	R	K	S	H	J	P	M	R	N	K	T	R	N	E	L	D	N	A	C	K
CANDLE	U	P	M	L	C	T	X	O	Q	X	G	I	N	A	O	F	Y	S	A	Q
COCOA	G	N	I	L	R	U	C	D	D	S	J	E	C	N	A	L	U	C	R	A
CURLING	B	T	D	K	S	E	T	G	S	H	H	P	H	I	L	K	U	G	F	Y
FIR	Y	E	F	P	N	L	D	M	T	T	L	Z	V	O	C	U	N	M	P	E
FIREPLACE	N	S	B	I	Y	W	R	S	K	S	D	I	H	O	P	L	S	G	P	H
FROST	S	C	P	L	O	Q	A	P	G	J	A	C	D	K	T	X	E	Z	L	H
GINGERBREAD	P	O	H	T	C	I	Z	K	S	N	E	T	T	I	M	K	X	C	A	S
HAT	A	C	L	S	E	N	Z	O	N	X	R	N	U	C	S	V	K	T	A	J
HOLLY	F	R	O	S	T	V	I	U	U	F	B	D	H	J	X	I	G	C	W	P
ICICLE	E	K	T	K	B	D	L	P	G	V	R	P	G	N	I	I	K	S	U	K
MARSHMALLOW	C	R	E	I	H	D	B	H	J	N	E	G	H	E	B	Y	D	W	A	T
MITTENS	A	K	P	V	B	X	B	N	B	F	G	A	O	S	R	J	J	B	O	P
MUG	L	H	I	T	F	L	G	Q	V	J	N	N	L	D	N	N	U	B	P	I
PINECONE	P	J	U	J	R	O	R	P	H	F	I	R	X	L	V	O	O	K	P	J
SCARF	E	G	I	J	T	R	H	A	F	A	G	J	O	M	I	G	W	Z	N	E
SKIING	R	Y	M	A	R	S	H	M	A	L	L	O	W	D	G	W	J	M	W	C
SNOWMAN	I	J	K	B	C	X	N	M	X	B	Y	P	O	A	S	M	E	F	A	Q
TOBOGGAN	F	A	O	B	C	A	O	C	O	C	G	U	N	S	T	W	Y	V	A	N



Can you spot all 20 differences between these two festive illustrations?

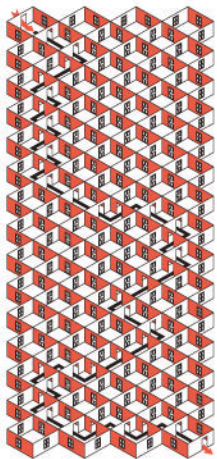


ANSWERS

Treasure Hunt



Changing Rooms



Word Wheel

1. PORCUPINE
2. COPPER
3. PRINCE
4. PINCER
5. CURIE
6. NOIR
7. NERO
8. RICE

Emoji Idioms

- A. Cold feet
- B. Get your ducks in a row
- C. The last straw
- D. Sweet tooth

Word Search

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

Link Words

1. BIRTHDAYLIGHT 2. BACKPACKAGE
3. GRAPEVINEYARD 4. CARDBOARDGAME

Hidden Phrases

1. Burn the candle at both ends 2. Leftovers
3. Last but not least 4. Crossbow

Picture Quiz



Tower Bridge



Rollerblades



Toucan



Glitter ball



Elephant's trunk

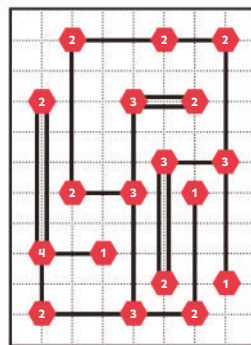


Holly berries

Spot the Difference



Bridge Puzzle



Word Ladders

HEAD

HERD

HERE

HIRE

FIRE

BITS

BITE

BIKE

BAKE

MAKE

SANE

CANE

CONE

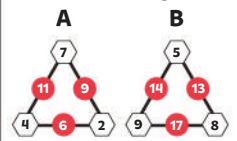
CORE

CORK

Cube It!



Number Triangles



Futoshiki

A

1	3	<	4	2
4	2	1	3	
2	1	3	4	
3	4	2	>	1

B

3	4	1	2
4	3	>	2
1	2	4	3
2	>	1	3

Sudoku

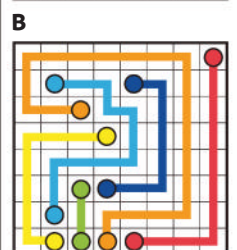
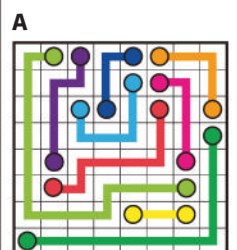
A

3	2	6	5	4	1
5	1	4	3	6	2
6	4	1	2	5	3
2	3	5	6	1	4
4	5	3	1	2	6
1	6	2	4	3	5

B

6	5	2	3	1	4
3	4	1	6	2	5
1	3	6	4	5	2
4	2	5	1	3	6
5	6	3	2	4	1
2	1	4	5	6	3

Connect the Dots



Quiz Answers

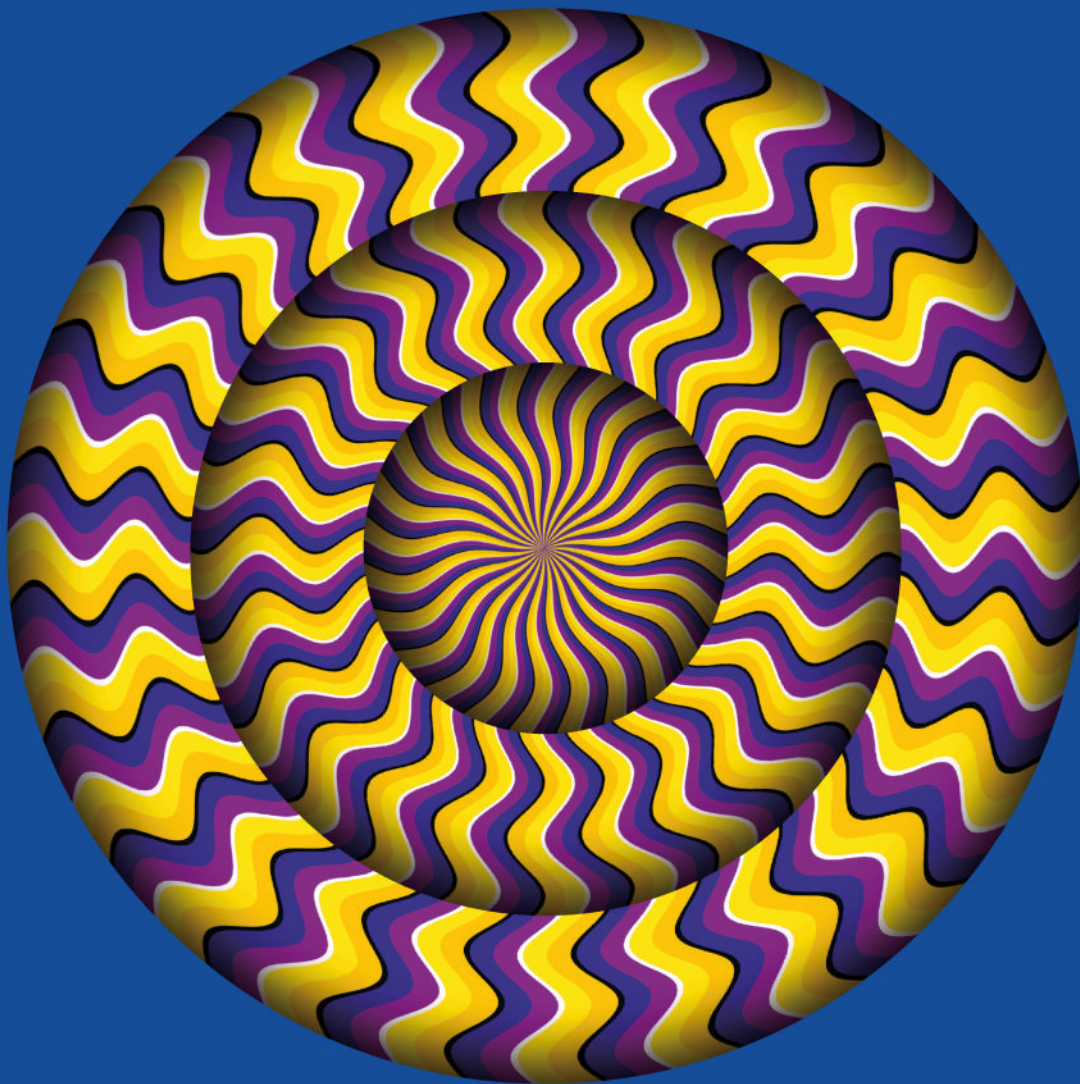
Animals 1. c, 2. d, 3. a, 4. c, 5. d. **Human Body** 1. d, 2. c, 3. b, 4. a, 5. c. **Geography** 1. a, 2. a, 3. c, 4. c, 5. c.

Human World 1. a, 2. c, 3. d, 4. d, 5. b. **Space** 1. b, 2. d, 3. a, 4. d, 5. d. **Lucky Dip** 1. b, 2. d, 3. c, 4. c, 5. b.

Other reindeer Prancer, Vixen, Comet, Cupid, Donner



Amazing optical illusions that trick your brain...



Swirling Circles Illusion

Look at the circular patterns above and let your eyes wander across the page, pausing occasionally to focus on one spot. What do you see? It looks as if the circles are moving! You may also notice that one circle spins clockwise while another spins anticlockwise – and each circle keeps spinning in the same direction.

Here's a clue to how the illusion works: if you stare at one spot, the spinning stops. But when

you look around, it starts again. Moving your eyes matters because it makes the image fall on different parts of your retina, which is the light-sensitive layer at the back of your eye. The illusion is created by the precise ordering of the coloured bands in each circle, which fools your brain into thinking they're moving when they're not. To find out more about the anatomy of the eye and how it works, turn to page 26.

CHRISTMAS TRADITIONS

How do people in your family or community celebrate Christmas? Here are some fun and fascinating festive traditions from around the world.



1. ICELAND

- People exchange books on Christmas Eve and spend the night reading and eating chocolate.

16. UNITED STATES

- A pickle ornament is hidden in the Christmas tree, and the first person to find it receives an extra gift.



16

15. MEXICO (OAXACA)

- Locals celebrate by carving intricate designs into radishes during the Night of the Radishes festival.



15

14. VENEZUELA (CARACAS)

- People roller-skate to early morning church services on Christmas Eve.



13. LIBERIA

- Old Man Bayka, a local name for Santa Claus, appears to dance and spread cheer during the holidays.

4. SPAIN (CATALONIA)

- Families use a wooden 'pooing log' called Tió de Nadal that humorously 'poos' small gifts.



1

2

3

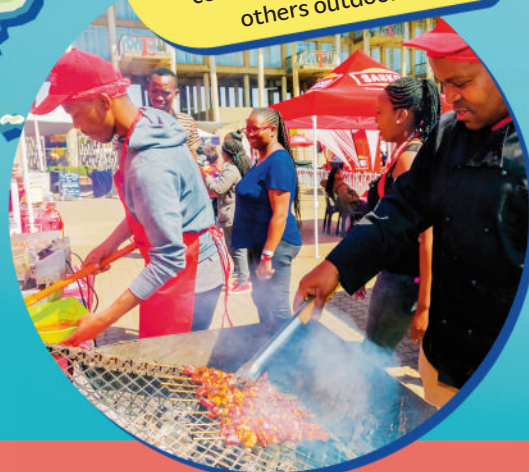
4

5

13

12. SOUTH AFRICA

- Families enjoy a festive braai, or barbecue, to celebrate Christmas with others outdoors.





2. SWEDEN
Towns display the Yule goat, a straw or wooden figure that represents old pagan winter customs.



3. AUSTRIA
The fearsome Krampus roams the streets, punishing children who misbehaved during the year.

5. ITALY
La Befana, a kindly witch, delivers gifts and sweets to children on the night before Epiphany.



6. JAPAN
Families celebrate Christmas by enjoying meals of fried chicken, a tradition popularised in the 1970s.



7. PHILIPPINES (SAN FERNANDO) The city hosts the Giant Lantern Festival, featuring enormous and colourful star-shaped lights.



9. AUSTRALIA
Many celebrate with beach gatherings and Santas who surf instead of arriving by sleigh.



11. MALAWI
Communities perform the Chisamba dance to celebrate joy and unity during Christmas.



10. EGYPT
Fruitcake is believed to trace back to ancient Egypt, where preserved fruits and nuts were common.

8. NEW ZEALAND
The bright red pōhutukawa tree blooms at Christmas, symbolising the southern summer holiday.



LISTIFIED!

Prepare to be amazed (and amused!) by the unusual facts crammed into these irresistible lists.

Listified! written by Andrew Pettie and illustrated by Andrés Lozano is out now.



BROTHERS & SISTERS

Eight sets of famous siblings, and when they made their mark

1



1 Trung Trac and Trung Nhi – 1st century CE

Claim to fame: The Trung sisters learnt martial arts as children and grew up to become military leaders in what is now Vietnam. They led local resistance to the ruling Chinese Han dynasty and became symbols of Vietnamese independence. They are still celebrated as national heroes today.

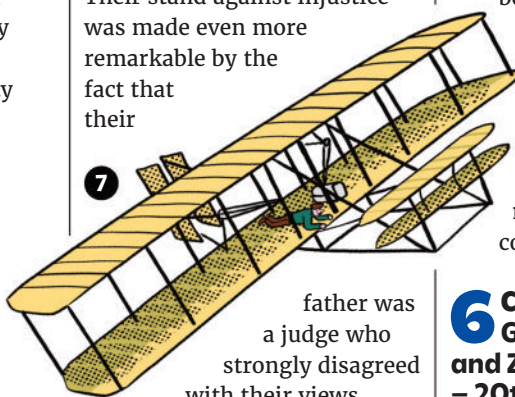
2 Charlotte, Emily and Anne Brontë – 19th century

Claim to fame: Each of these three English sisters was a brilliant writer and novelist. The trio's famous novels include *Jane Eyre* (by Charlotte), *Wuthering Heights* (by Emily) and *The Tenant of Wildfell Hall* (by Anne).

3 Sarah Moore and Angelina Emily Grimké – 19th century

Claim to fame: The Grimké sisters

from South Carolina, United States, gave powerful public speeches in support of women's rights and the abolition (ending) of slavery. Their stand against injustice was made even more remarkable by the fact that their



7

father was a judge who strongly disagreed with their views.

4 Jacob and Wilhelm Grimm – 19th century

Claim to fame: Their collection of traditional stories and songs – *Grimms' Fairy Tales** – is read by and to children all around the world. Curiously, the German brothers' first names are little known today and the pair are nearly always referred to as the 'Brothers Grimm'.



7

5 Ira and George Gershwin – 20th century

Claim to fame: The American Gershwin brothers were both talented musicians.

George wrote popular musicals and songs for piano and for orchestra, while

Ira wrote the lyrics to go with George's music, as well as musical compositions of his own.

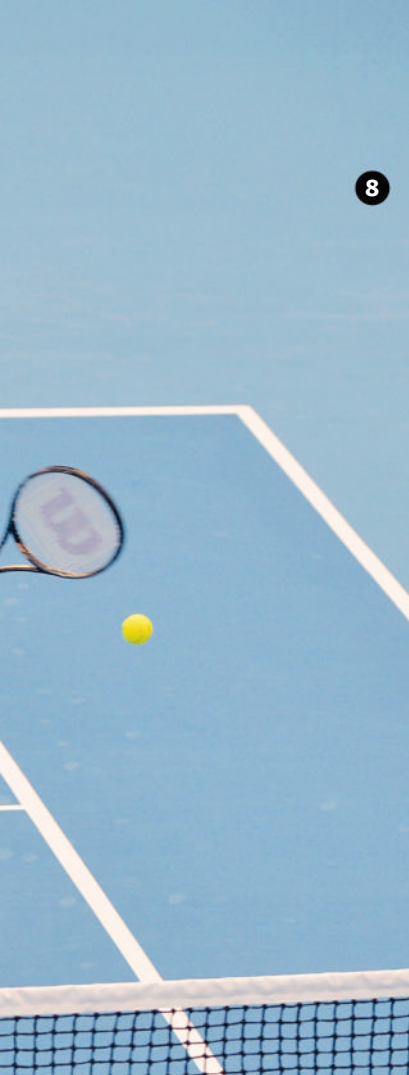
6 Chico, Harpo, Groucho, Gummo and Zeppo Marx – 20th century

Claim to fame: The Marx Brothers were a successful American family comedy act. They started as live comedy performers before making a series of hit movies in Hollywood in the 1930s.

7 Wilbur and Orville Wright – 20th century

Claim to fame: The Wright brothers were engineering enthusiasts who owned a bicycle shop. In 1903, they built and flew the first





8



2



powered aeroplane, *Flyer 1*, at Kitty Hawk in North Carolina, United States. The Wright brothers' pioneering flight lasted just 12 seconds.**

8 Venus and Serena Williams – 20th and 21st centuries

Claim to fame: The record-breaking American sisters are two of the greatest tennis players of all time. At different times, both Venus and her younger sister Serena were ranked as the number-one women's player in the world.

Between them, they won 30 major singles trophies and eight gold medals at the Olympic Games.

*There are more than 200 stories in *Grimms' Fairy Tales*, including the tales of Rapunzel, Hansel and Gretel and Tom Thumb.

**Even though its first flight didn't last long, *Flyer 1* has since been to great heights – even into outer space! Pieces of wood and fabric from *Flyer 1* went to the Moon in 1969.

Crystal-Gazing

Thirty-five different types of snowflake

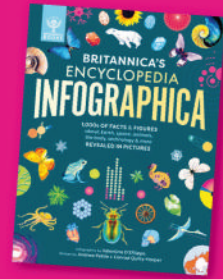
Although no two individual snowflakes are exactly the same, scientists have given names to groups of snowflakes that have similar shapes.

1. Simple prisms
2. Hexagonal plates
3. Stellar plates
4. Sected plates
5. Simple stars
6. Stellar dendrites
7. Fernlike stellar dendrites
8. Solid columns
9. Hollow columns
10. Bullet rosettes
11. Isolated bullets
12. Simple needles
13. Needle clusters
14. Crossed needles
15. Sheaths
16. Cups
17. Capped columns
18. Multiply capped columns
19. Capped bullets
20. Double plates
21. Hollow plates
22. Scrolls on plates
23. Columns on plates
24. Split plates and stars
25. Skeletal forms
26. Twin columns
27. Arrowhead twins
28. Crossed plates
29. Triangular forms
30. Twelve-branched stars
31. Radiating plates
32. Radiating dendrites
33. Irregulars
34. Rimed
35. Graupel



A timeline of inventions!

Throughout history, humans have used their creativity and ingenuity to invent things to make our lives easier and better (or, in the case of weaponry, to cause more destruction). Across the next four pages, discover the history of invention over hundreds of thousands of years, all from the fascinating *Britannica's Encyclopedia Infographica*.



CERAMICS

The earliest known ceramic artifact is a statuette of a woman, found in modern-day Czechia.



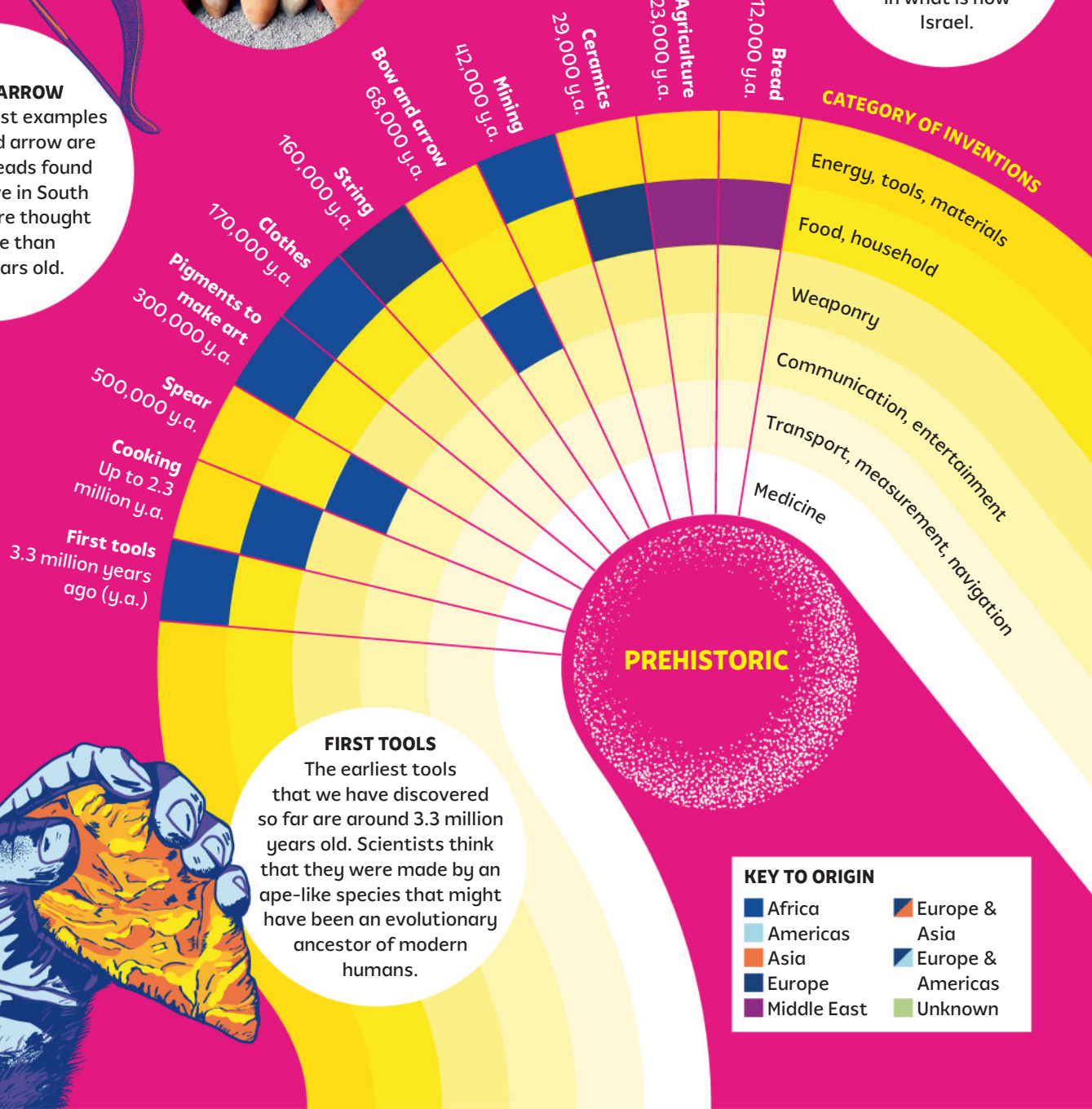
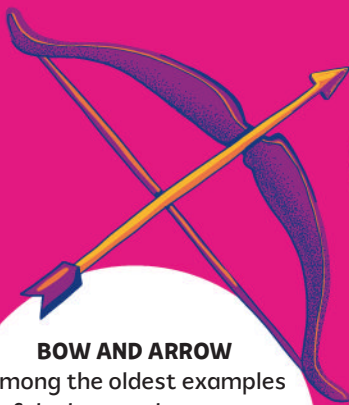
AGRICULTURE

The earliest evidence of agriculture dates from 23,000 years ago and was found in what is now Israel.



BOW AND ARROW

Among the oldest examples of the bow and arrow are stone arrowheads found at Sibudu Cave in South Africa. They are thought to be more than 60,000 years old.



FIRST TOOLS

The earliest tools that we have discovered so far are around 3.3 million years old. Scientists think that they were made by an ape-like species that might have been an evolutionary ancestor of modern humans.





CHESS

The game of chess was probably invented in India. From there it spread to the Middle East and Europe.

Mechanical printing press
1455

Compass
1100s CE

Firearms
900s CE

Gunpowder
800s CE

Playing cards, Dominoes
800s CE

Mechanical clock
725 CE

Chess
500s CE

Paper
105 CE

Water wheel
85 BCE

Glass
2,500 BCE

Wheel
3,500 BCE

Sailing boat
4,000 BCE

Irrigation
6,000 BCE

Plumbing
6,500 BCE

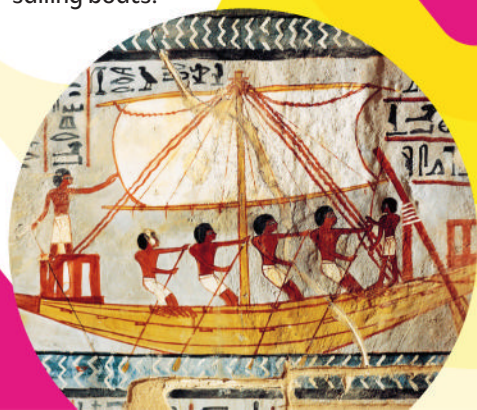
Brick
7,500 BCE

Written language
8,000 BCE

ANCIENT & MEDIEVAL

DID YOU KNOW?

Leonardo da Vinci, who painted the *Mona Lisa*, also invented the parachute and the helicopter!



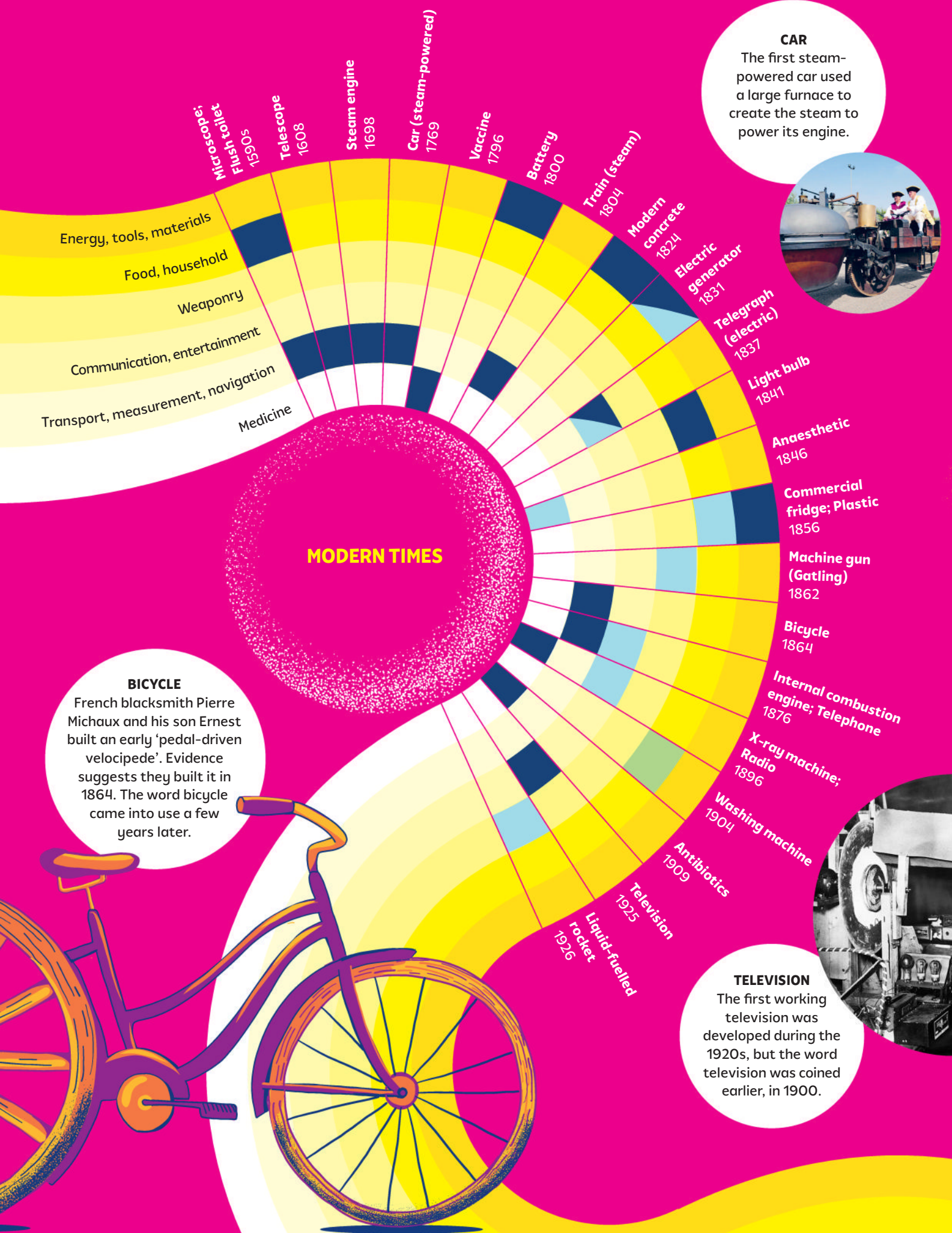
SAILING BOAT

The ancient Egyptians were one of the earliest civilisations known to have used sailing boats.

THE WHEEL

No one knows exactly when the wheel was invented or who invented it. There is evidence that wheels were used to make pottery around 5,500 years ago, in the region of the Middle East that is now in Iraq.





CAR

The first steam-powered car used a large furnace to create the steam to power its engine.



BICYCLE

French blacksmith Pierre Michaux and his son Ernest built an early 'pedal-driven velocipede'. Evidence suggests they built it in 1864. The word bicycle came into use a few years later.



TELEVISION

The first working television was developed during the 1920s, but the word television was coined earlier, in 1900.



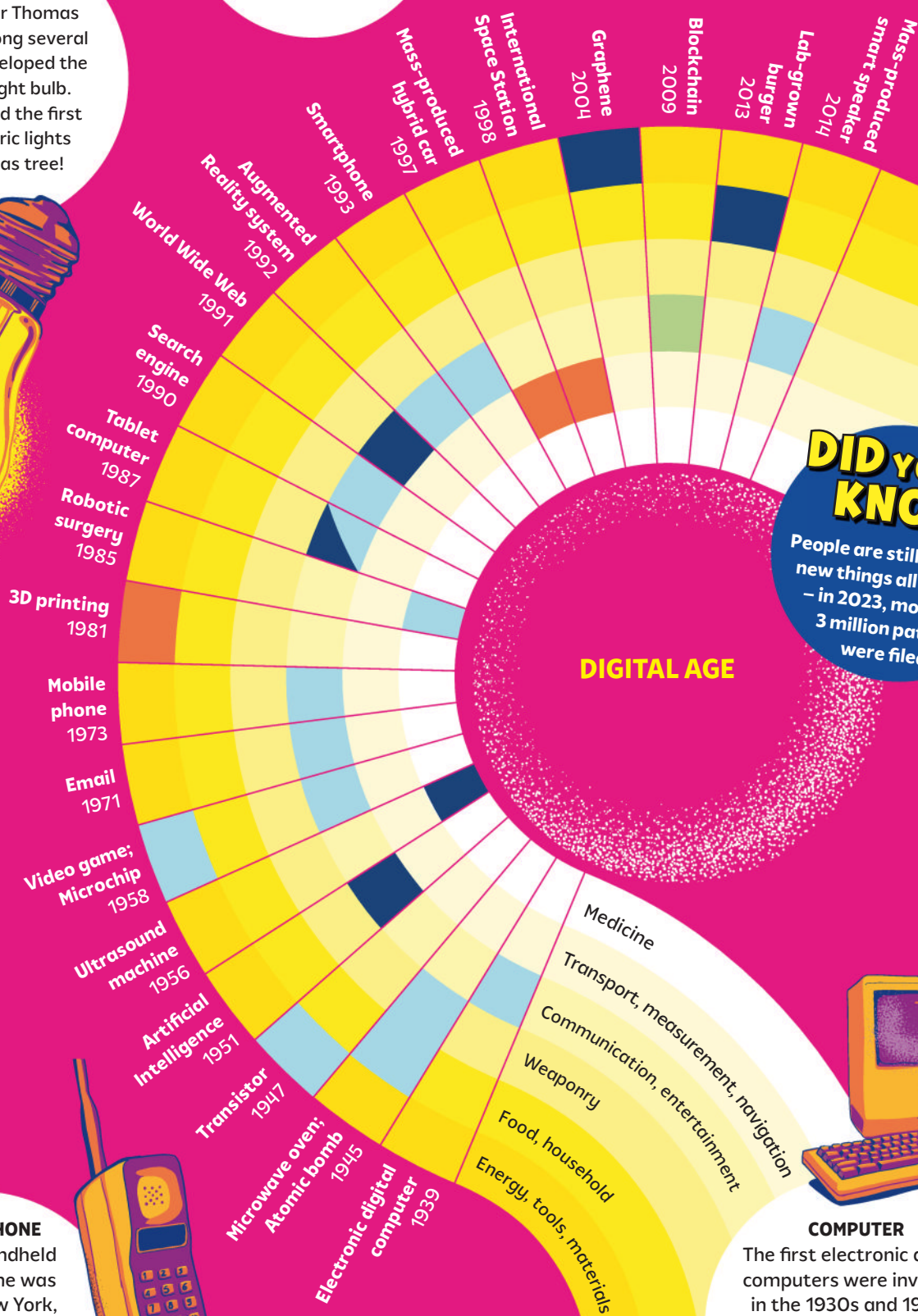
LIGHT BULB

The US inventor Thomas Edison was among several people who developed the first electric light bulb. He also invented the first string of electric lights for a Christmas tree!



ISS

Fifteen different countries were involved in building and launching the International Space Station.



DID YOU KNOW?

People are still inventing new things all the time – in 2023, more than 3 million patents were filed!

DIGITAL AGE



COMPUTER

The first electronic digital computers were invented in the 1930s and 1940s. Some were big enough to fill an entire room! Smaller desktop computers were first developed in the 1960s.

MOBILE PHONE

The first handheld mobile phone was made in New York, USA, in 1973. It was the size of a shoebox and could make calls for 35 minutes before needing 10 hours to recharge.



MAP IT



THE MIGHTY OLYMPUS MONS

Did you know that the tallest mountain in our solar system is three times the height of Mount Everest? This massive mountain, Olympus Mons, is a shield volcano located on the planet Mars. The volcano is extremely wide, too – as you can see in the map below, Olympus Mons covers the same area as the US states of West Virginia, Virginia and North Carolina combined!



DID YOU KNOW?

Olympus Mons's caldera – the crater left after an eruption – is about 85 km across, or the distance between London and Oxford!

UNITED STATES

WEST VIRGINIA

Caldera
(85 km)

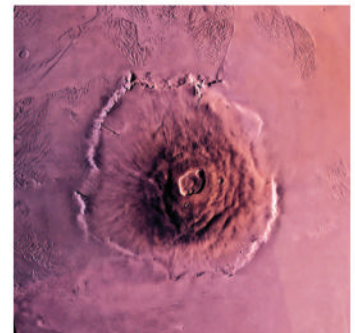
VIRGINIA

NORTH CAROLINA

ATLANTIC OCEAN

DID YOU KNOW?

Olympus Mons's last major eruption was about 25 million years ago, which is recent in geological terms. It may erupt again!



OLYMPUS MONS (26,400 M)

Measured from base to summit, the volcano Mauna Kea in Hawaii is Earth's tallest mountain at 10,205 metres, although most of it lies beneath the ocean. Mount Everest in the Himalayas stands 8,849 metres high. Olympus Mons towers over them both at a staggering 26,400 metres!

EVEREST
(8,849 m)

MAUNA KEA
(10,205 m)

Sea level



240 km

THINK DIFFERENT!

Original people who changed the world.

This month: Walt Disney.

Illustration by Esperanza Hickling

WHO WAS WALT DISNEY?

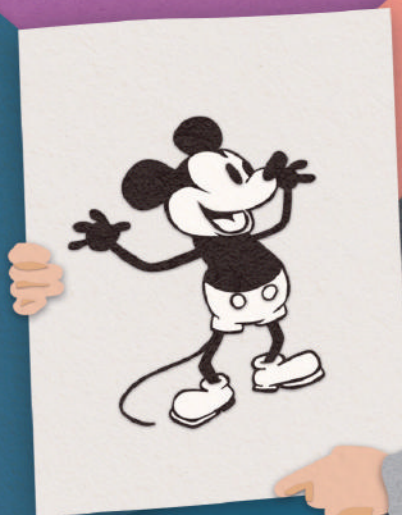
Walt Disney was a pioneering animator, storyteller and businessman who transformed the world of entertainment. He is best known for creating Mickey Mouse and founding Disneyland and Disney World, two of the world's most famous theme parks.

WHEN AND WHERE DID HE LIVE?

Disney was born in 1901 in Chicago, USA. He spent much of his childhood in Missouri, where he developed a love for drawing and storytelling. In his early twenties, Disney moved to Hollywood, California, where he lived and worked for most of his life, imagining new characters and building a creative empire that would one day become a household name.

HOW DID HE THINK DIFFERENTLY?

From a young age, Disney had a vivid imagination and a daring spirit. Unlike most animators of his day, who focused on short, simple cartoons, Disney dreamed of creating longer, animated films with rich stories and memorable characters. He was among the first to match sound



“

All our dreams can come true, if we have the courage to pursue them.
Walt Disney

to animation – starting with *Steamboat Willie* in 1928 – and his full-length movie *Snow White and the Seven Dwarfs* was America's first animated feature film. Many doubted his ideas would succeed, but Disney pushed forward, combining art, technology and business in new ways. He even imagined places where people could enter their favourite stories: in 1955,

Disneyland opened, inviting visitors to step inside the magic of his movies.

HOW DID HIS IDEAS CHANGE THE WORLD?

Walt Disney's vision changed entertainment. Thanks to his innovations, animation became a major art form – giving the world films such as *The Lion King* and *Frozen*. The Walt Disney Company went on to create TV shows, comics and music that people of all ages enjoy. His theme parks inspired similar attractions across the globe. The Disney brand is associated with creativity and imagination, showing that one person's dreams really can make the world a more magical place.



FUNNY ANIMALS!

Our brains are wired to spot human-like behaviour everywhere. When we see it in animals, it's unexpected and delightful – let's explore why.

'Show-off!'



'Don't mind us,
we're just
horsing around!'



'Oi, keep your hands
to yourself!'

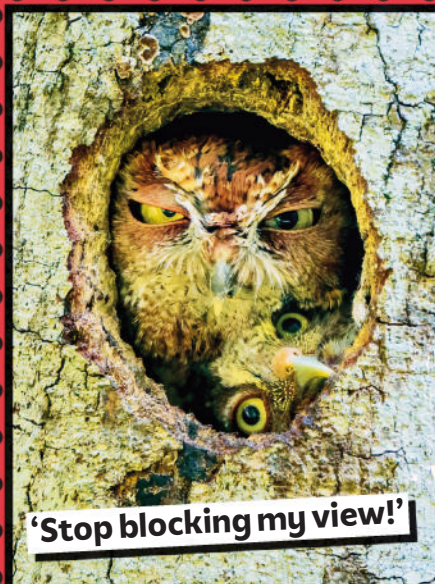


Have you ever wondered why you can't stop laughing at a photo of a cat missing a jump or a hamster with its cheeks stuffed full of food? There are two main reasons that funny animal photos make us smile.

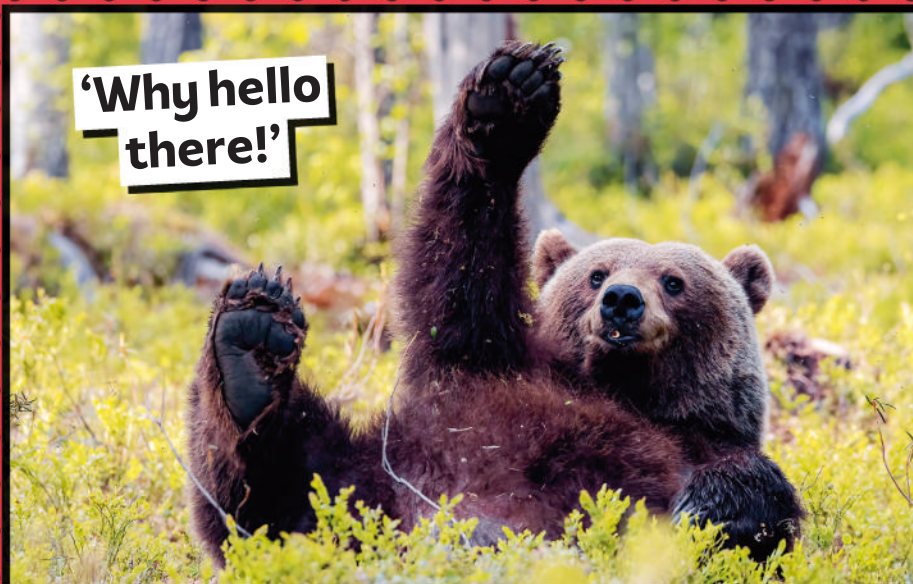
First, animals sometimes do exactly the sorts of things we do. When a penguin slips on ice or a raccoon is surprised by its reflection, it creates a type of physical comedy we can relate to. We've all had clumsy moments, and seeing animals have them too often makes us laugh!

Second, we love to imagine that animals are just like us. When a cat looks grumpy, we think it's annoyed with its day. When prairie dogs appear to 'kiss', we imagine they're like best friends saying hello. Scientists call this anthropomorphism – projecting human thoughts or feelings onto animals. The truth? That cat might just be sleepy, and those prairie dogs may actually be checking each other's teeth for identification. What seems funny to us is often just an invention of our brains.

Do you have a funny animal at home? Send your photos to letters@whatonearthmag.com for a chance to see you and your pet in a future issue!



'Stop blocking my view!'



'Why hello there!'



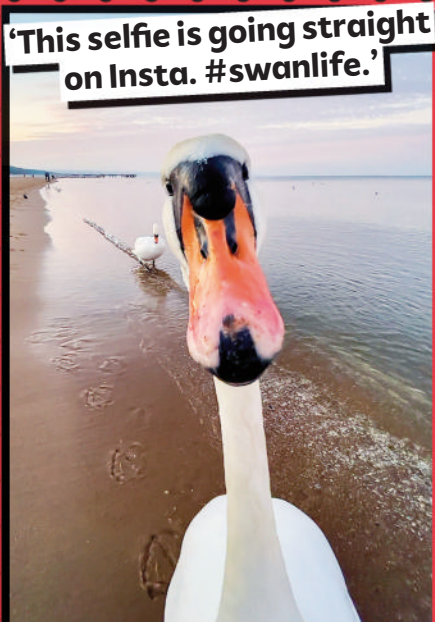
'Oof.'



**'You hide. I'll count.
1, 2, 3...'**



**'Do you like my
new flippers?'**



**'This selfie is going straight
on Insta. #swanlife.'**



'Let's rock and roo!'

THE BIG QUESTIONS

How do planets 'float'?

There are eight planets in our solar system – Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune. Each one follows its own path, an orbit, around the Sun in the middle. The orbits never meet or cross, so the planets don't bump into each other. The planets stay on their orbit and don't drift off into space because the Sun's gravity keeps pulling them towards it. However, neither do they crash into the Sun, because they're travelling too fast to fall down. It's the balance between the force of gravity and speed that keeps them all following their paths in space.

Saturn

Neptune


Why do we send animals to space?

One of the most important things astronauts do is conduct science experiments. They take lots of measurements of themselves to see how their bodies might have changed. They grow plants and care for animals, too. Working with animals helps scientists understand how living in space changes living things. In one experiment, astronauts collected mouse poo to find out if the good germs living in the mice's guts changed in space.

All kinds of animals have been to space, from apes such as chimpanzees to tardigrades (pictured right). Tardigrades are really tiny in real life – even smaller than an ant. This picture is very enlarged!

Mice get used to floating in a space station very quickly.





The paths around the Sun are called heliocentric orbits.

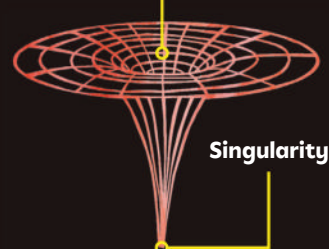
DID YOU KNOW?

Planetary orbits are elliptical, not circular. Planets move faster when they're closer to the Sun.

How does a black hole form?

Black holes are formed when a star collapses and dies. When a large star collapses, it creates a huge explosion. Anything that's left over after this explosion falls into a tiny spot called a singularity. The singularity is the middle of a black hole, and it's tinier than the pointy end of a pencil! Around the singularity is the event horizon. It has extremely strong gravity that pulls in everything around it, even light. Small black holes, which are a few times bigger than our Sun, can be formed in seconds. Black holes get bigger the more stuff they pull in, or when they crash into other black holes and join up with them. Supermassive black holes can reach the same size as billions of Suns, though scientists don't know how long this takes.

Event horizon



DID YOU KNOW?

The temperature in a rocket's combustion chamber can be hotter than 3,000 degrees Celsius!



How do spacecraft travel?

Rockets push spacecraft into space, and they need to travel at mind-boggling speeds of over 28,000 kilometres per hour in order to escape Earth's atmosphere. If a rocket is carrying a spacecraft such as a probe or a satellite, it will let it go once it's reached the right height. The spacecraft will stay in orbit because the energy of the rocket's launch keeps it moving forwards, and the pull of Earth's gravity stops it from floating off into space. After the spacecraft has been released, most rockets run out of fuel and either fall into Earth's oceans or burn up in the atmosphere.



THRUST

As the rocket's engine burns fuel, flames and hot gases are pushed out from the bottom, forcing the rocket upwards. This force is called thrust.

GRAVITY (weight)

To keep the rocket going, the thrust upwards has to be stronger than the force of gravity that's pulling the rocket back down towards Earth.

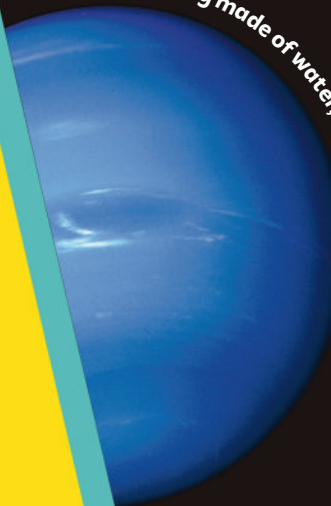
The flames, hot gases and smoke that come out of a rocket's engine are called exhaust.

Astronauts can catch their food in their mouths as it floats past. They can even eat upside down!



Jupiter is mostly made of the gases hydrogen and helium.

Neptune is mostly made of water, ammonia and methane.



How can you eat in space?

The weightlessness in space makes everything float – even the food! This means astronauts must be tidy eaters. Crumbs or spilled liquids don't land on the floor like they do

on Earth, and they might get stuck inside the equipment. Every now and then, fresh fruit and vegetables are delivered to the space station, but most space meals are packed in bags. The food inside is either

freeze-dried or turned into powder by removing the water. Astronauts add hot water to make warm snacks, or cold water for refreshing drinks, and then slurp them up using a tube or straw.

Astronaut food is kept in containers that are stuck to trays using a fastening fabric called Velcro.



How do we know what planets are made of?

We know Earth is mainly made of rock and metals because scientists have studied its crust, or surface. Using that information, they've worked out that there are more layers of rock and metal underneath. In the same

way, space scientists have landed spacecraft on Venus and Mars and explored the atmosphere of Mercury, and found that all of these four planets nearest the Sun are rocky. However, the planets Jupiter, Saturn, Uranus and

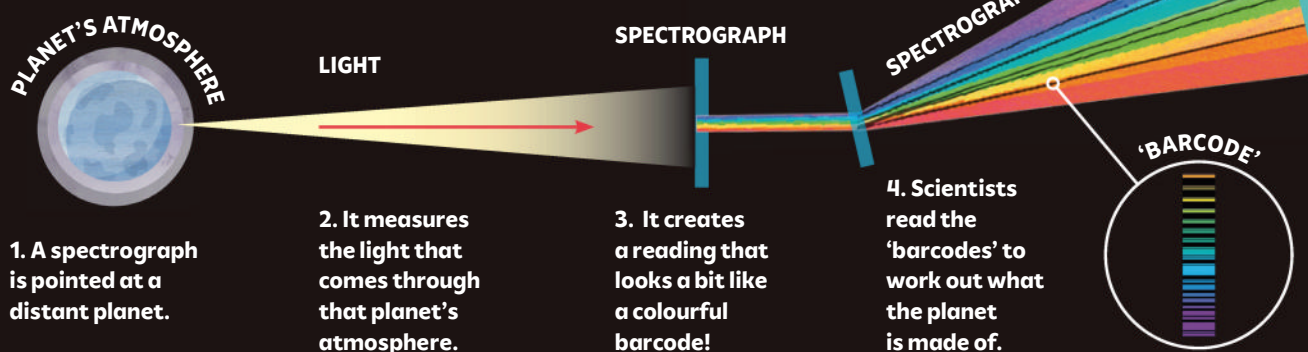
Neptune are much further away. To discover what these planets are made of, astronomers use a tool called a spectrograph, which can tell you a lot about a planet by measuring wavelengths of light reflected by it.

Venus is mostly made of rock and metal.



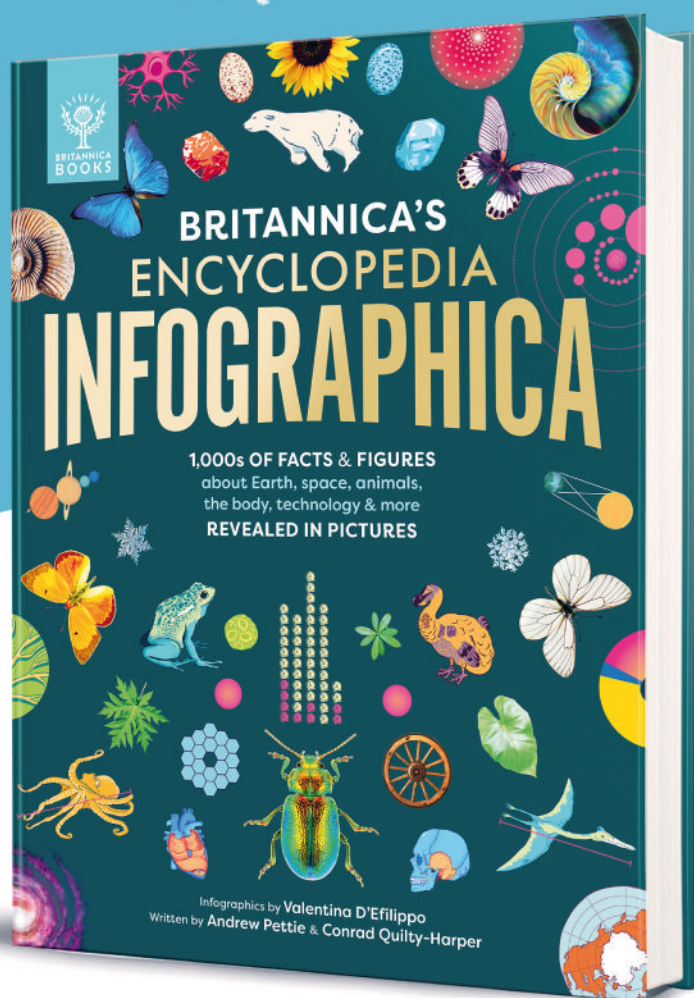
First Big Book of Why, written by Sally Symes and Stephanie Drimmer, and First Big Book of How, written by Sally Symes and Saranne Taylor, are both out now

HOW A SPECTROGRAPH ANALYSES PLANETS

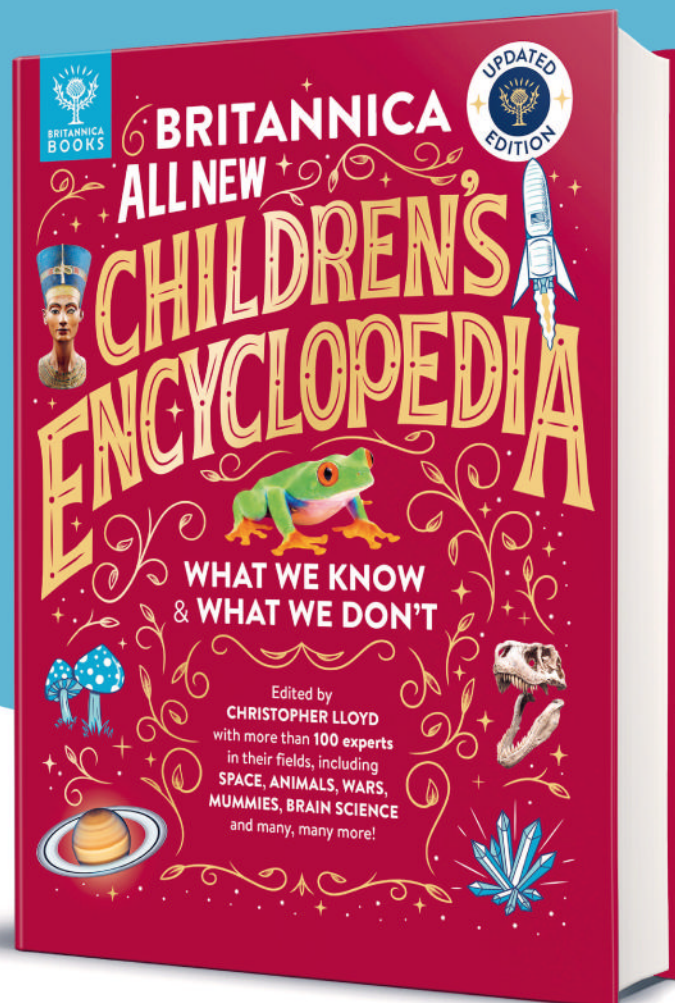


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People who cuddle cats know how comforting it can be to feel a cat's purr.
Cats purr when they are happy, but also when they are stressed.
Scientists still don't know exactly how they do it. And
as for why cats make their purring sounds...

NOBODY
KNOWS!

SEND IT IN!

Tell us your favourite FESTIVE JOKE!

We love hearing the hilarious jokes and fiendish riddles sent in by What on Earth! Magazine readers each month. And to celebrate the coming of Christmas, we're inviting YOU to send us your favourite festive joke or riddle for a new competition. Your entry can be on any winter or Christmas theme. It can be a joke you've heard or one you've made up yourself. Our jokes editor, May, will choose the winning entries, which will feature in a future issue of the magazine. Good luck!

HOW TO ENTER

Send your joke or riddle to jokes@whatonearthmag.com. The five winners will receive a copy of the deliciously disgusting *Gross FACTopia!*



What do
alligators
drink at
Christmas?



Listen to these oink-credible impersonations



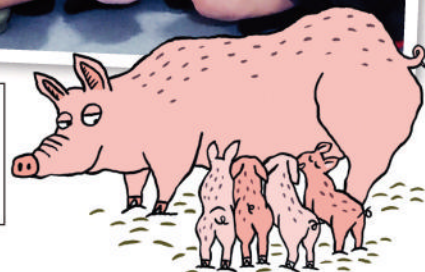
Pig impressionist
Edmund with dog
impressionist Toby.

What's your favourite animal to imitate? A barking dog, a miaowing cat or a neighing horse? Thanks to our series on animal communication (see page 12 for the latest instalment on alligators), we've received enough impressions to fill a zoo! This month we were treated to a farmyard's worth of pig noises, from Edmund, 9, and also from siblings Barney, 8, Coralie, 5, and Helena, 11.

Huge congratulations to all our featured piggies – a copy of *How to Chat Chicken* is on its way. Scan the QR code to hear them oink and squeal!



Barney, Coralie and Helena diving
into the world of What on Earth!



**Hot
croc-olate!**



of pigs!

HOW YOU CAN STAR IN A FUTURE ISSUE

We're always on the lookout for brilliant readers (and their pets) to star in future issues of What on Earth! Magazine. So why not send us an email with something fun or creative – such as a photo, a drawing or your favourite fact or joke? Email it to us at letters@whatonearthmag.com and you could see your name, photo, amazing fact or drawing featured on these very pages!

What on Earth!

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Awards



Best Designer



Children's Brand of the Year
Designer of the Year



Consumer Publication of the Year
Creative Director of the Year



Art Director of the
Year, Consumer



Subscription
Brand of the Year



What on Earth!

BUCKLE UP FOR THE TRUE STORY OF

**ABSOLUTELY
EVERYTHING!**

**YOU'LL
DISCOVER...**

...an armadillo the size of a truck,
a 4,000-year-old bowl of noodles,
Egyptian embalmers stirring brains,
a robotic duck that poos, a ball
game that could get you killed,
and so much more!



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MAKE YOUR OWN BATH BOMB!

A nice hot bath can feel so relaxing on a chilly evening. And what's better than a gently fizzing bath that smells wonderful, too? Bath bombs are a fun and easy way to make your bath a little bit fancier. And if you wrap them up nicely they also make charming Christmas gifts.

DID YOU KNOW?

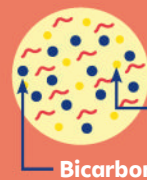
Bath bombs are a relatively new invention. They were first made in 1989 in Dorset in the UK.

WHY DO BATH BOMBS FIZZ?

Bath bombs are made of bicarbonate of soda, which is a type of substance called a base, and citric acid, which is an acid. If you've ever made a 'volcano' using bicarbonate of soda and vinegar, you know what happens when you combine

an acid and a base – a bubbly chemical reaction! In a bath bomb both substances are powdered and stable. They need water to react together. The reaction creates carbon dioxide, a gas that creates the fizz, and a chemical compound called trisodium citrate.

Bath bomb



Exposure to water

Citric acid

Bicarbonate of soda



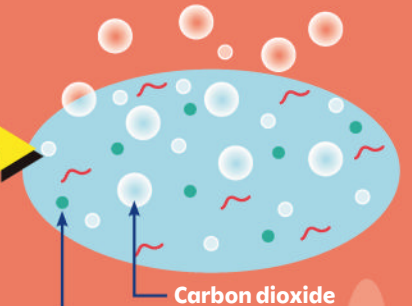
Binder material



Water

Carbon dioxide

Trisodium citrate



*Citric acid can be bought online or at some supermarkets in the baking section. If you can't get citric acid, you can follow the same recipe without it to make shower steamers, which won't fizz but melt in the shower. **Anything that will hold the shape you want for your bath bomb – ice cube trays, yoghurt pots and cookie cutters on a tray can all be used as moulds.

WHAT YOU NEED

100 g
bicarbonate
of soda



25 g cornflour



25 g
Epsom salts



50 g
citric acid*

Liquid food
colouring
(optional)



10 drops
essential oils
of your choice



Spray
bottle



2 tbsp oil
(coconut oil or
olive oil work)

Mixing bowl, jug, whisk
& measuring spoons



Moulds**



IDEAS FOR SCENTS

Certain scents are thought to affect people's mood, and steam with some essential oils can be helpful if you're feeling under the weather. Lavender is often used for calming and relaxing, peppermint for invigorating, citrus for energising, and eucalyptus for easing a blocked nose. If you have more than one oil, you can try combining them. However if you're sensitive to scents or don't want your bath bomb to smell just make it plain and fizzy!

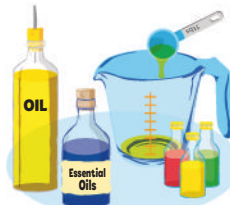
1

Whisk the bicarbonate of soda, epsom salts, cornflour and citric acid in a bowl.



2

Mix your food colouring (if using) with your essential oil(s) and oil in a jug.



3

Add the oil to the dry mixture slowly, whisking until fully combined.



4

Spray water one spray at a time on the mixture until it holds its shape when you squeeze it in your hand.



5

Press your bath bomb mixture into the moulds. If you like, you can first sprinkle glitter or dried flowers or peels inside.



6

Leave your bath bombs to dry for at least 4 hours and then carefully remove them from the moulds.



TOP TIP!

Don't add too much water when creating the mixture, or your bath bomb will do all its fizzing!



Lucy used cookie cutters on a tray as her moulds. Her top tip: wax paper or parchment helps prevent sticking!



For gifting, put your bath bombs in a jar decorated with ribbon or wrap them individually in festive cellophane.

Jokes & Riddles

How does
**Good King
Wenceslas**
like his
pizza?

**Deep pan,
crisp and
even!**

Question
What's the
difference between
a knight and a
reindeer?

Answer
One slays a dragon
and the other
drags a sleigh!

What did the
stamp
say to the
**Christmas
card?**

**Stick
with me
and we'll
go places!**

Why did the
snowman
go to the
supermarket?

What does
Santa
suffer from if he gets
stuck in a
chimney?

**Claus-
trophobia!**

To
**pick
his
nose!**





Send your name, age and favourite joke to our jokes editor May at jokes@whatonearthmag.com. If your joke is featured in a future issue of the magazine, you will **WIN** a copy of Secret FACTopia!



What do you get if you **eat** Christmas decorations?

Tinsel-itis!

LOL!



What do you call **Santa** if you see him at the South Pole?

A **lost** Claus!



How did **Darth Vader** know what **Luke Skywalker** got him for Christmas?

He **felt** his presents!

Question
What falls but never gets hurt?

Answer
Snow!

**READER'S
JOKE
OF THE
MONTH**

Sent in by
Barley,
age 11

What do you call it when a **snowman** has a **temper tantrum**?

A **meltdown**!

HA!
HA!





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