



national SCIENCE WEEK 2026



An Australian Government Initiative



ADULTS

BRAIN BREAKS 2026

QUESTION 1

Why does Australia have a much higher number of marsupial species than most other parts of the world?

- A** Marsupials are better adapted to Australia's climate than placental mammals
- B** Marsupials arrived in Australia more recently than other mammals
- C** Australia was geographically isolated for millions of years, limiting competition from placental mammals
- D** Marsupials evolved faster in Australia due to volcanic activity

QUESTION 2

The Emu in the Sky is a dark constellation that First Nations peoples have observed for thousands of years. What is a dark constellation? Bonus point if you know what the Emu in the Sky indicates in First Nations knowledge systems.

Answer:



QUESTION 3

What is the oldest known individual living organism on Earth?

- A** A Great Basin bristlecone pine tree
- B** A giant tortoise
- C** A Greenland shark
- D** A sequoia tree

QUESTION 4

Why was the chainsaw first invented?

- A** To fell trees
- B** To shear sheep
- C** To power a car
- D** To help in childbirth

QUESTION 5

True or false: Mixing your alcohol (for example, drinking beer, wine and spirits in the same session) leads to a worse hangover.

True False

QUESTION 6

The earliest forms of contraception date back to ancient times, between about 4,000 and 1,000 years ago. What material was the earliest documented condom made from?

- A** Goat's bladder
- B** Vine leaves soaked in herbal tea
- C** Layers of linen stitched together
- D** The membrane of an egg

QUESTION 7

Imagine you are inside a moving car, and beside you is a balloon filled with helium. All of a sudden, the traffic lights turn red, and you come to a screeching halt. As the car stops, which direction does the helium balloon travel?

- A** Forwards towards the windscreen
- B** Backwards towards the boot

QUESTION 8

For thousands of years, First Nations peoples have weaved spinifex grass into shelters and other items. New technology is investigating the use of spinifex fibres for packaging and road materials. What makes these fibres particularly useful in modern materials?

- A** They are water repellent
 - B** They are extremely strong
 - C** They take centuries to degrade
 - D** They attract insects
-

QUESTION 9

Why does coffee often make you need to poop?

- A** Coffee stimulates stomach acid production
 - B** Coffee stimulates the release of the gastrin hormone
 - C** Coffee stimulates peristalsis (wave-like muscle movements in your digestive system)
 - D** All of the above
-

QUESTION 10

You may have heard about the cleaning hack that uses vinegar and baking soda to clean ovens, burnt pans, stovetops and showerheads. But does this fizzy mixture actually work as a powerful cleaner?

- A** Yes, it creates a stronger chemical cleaner
- B** No, it mostly just fizzes and the ingredients cancel each other out

QUESTION 11

What makes the bubbles in the head of a Guinness beer different from those of most other beers?

- A** Guinness beers are carbonated using only carbon dioxide gas
 - B** The use of roasted barley results in creamier bubbles
 - C** Guinness beers are carbonated using a mix of carbon dioxide and nitrogen gas
 - D** The bubbles hold together in groups of 3, in the shape of a shamrock
-

QUESTION 12

In 2024, researchers won an Ig Nobel Prize for proving that mammals including pigs and mice can partially breathe through their anuses. What was the original scientific motivation for this research?

- A** To develop new drug delivery methods
 - B** To study digestive system evolution in mammals
 - C** To find alternative ventilation methods during respiratory crises like COVID-19
 - D** To understand how deep-sea creatures survive in low-oxygen environments
-

QUESTION 13

True or false: A smooth golf ball would travel further than a golf ball with dimples.

True False



QUESTION 14

Why do so many pet owners treat their dogs like their children?

- A** Social media has rewired humans to project emotion onto animals
 - B** Dogs trigger production of oxytocin, the 'love' hormone that bonds parents to babies
 - C** Dogs are the only animals that make eye contact, which tricks the brain
 - D** All of the above
-

QUESTION 15

Many of Australia's highways follow routes mapped out thousands of years ago by First Nations Australians. What markers did they use to memorise these routes?

- A** Rivers
 - B** Animal tracks
 - C** The stars
 - D** The Sun
-

QUESTION 16

Many modern devices, such as speakers, headphones and smartwatches, can now connect to and communicate with one another using Bluetooth. What signals does Bluetooth send between devices?

Answer:



QUESTION 17

Archaeological evidence shows that First Nations Australians were the first people in the world to make bread. They have used grinding stones to make flour from native seeds for approximately how long?

- A** 500 years
 - B** 5,000 years
 - C** 30,000 years
 - D** 100,000 years
-

QUESTION 18

Earth's days are:

- A** Becoming shorter
 - B** Staying the same length
 - C** Becoming longer
-

QUESTION 19

Some skyscrapers soar hundreds of metres into the sky yet remain steady even in strong winds, thanks to a device called a tuned mass damper. What does a tuned mass damper do?

- A** Pumps air through the building to increase air pressure and hence stability
 - B** Uses a large internal weight that moves opposite to the building's sway
 - C** Anchors the building deep into its foundations to reduce movement
 - D** Has flexible rods that sway with the wind
-

QUESTION 20

More than 1,500 years ago, a remedy known as 'yellow soup' was used in ancient China. This 'poop soup', which was a slurry of human faeces, was used to treat what ailments?

- A** Severe diarrhea and food poisoning
- B** Chronic fatigue and low energy
- C** Sore throat and mouth ulcers
- D** Respiratory illnesses such as a persistent cough

Answers

QUESTION 1

Answer: C Australia was geographically isolated for millions of years, limiting competition from placental mammals.

Australia is home to about two-thirds of the world's marsupials, with the other third mostly living in South America.

MORE INFORMATION:

- <https://australian.museum/learn/species-identification/ask-an-expert/what-is-a-marsupial/>
- <https://www.csiro.au/en/news/all/articles/2017/january/quick-facts-marsupials>

QUESTION 2

Answer: Dark constellations are the dark patches between the stars.

For many First Nations peoples, these constellations are just as important as the stars themselves. The dark areas are formed by cold, dense clouds of interstellar gas and dust. These clouds can block out light from the stars behind them, creating dark, silhouette-like shapes. The Emu in the Sky is a famous dark constellation that, depending on its position in the sky, signals to First Nations peoples the right time of year to collect emu eggs.

MORE INFORMATION

- <https://digital-classroom.nma.gov.au/images/emu-night-sky-constellation>
- <https://powerhouse.com.au/stories/looking-at-the-nguwing-buurah>
- <https://www.nma.gov.au/exhibitions/endeavour-voyage/sky-stories>
- <https://www.abc.net.au/science/starhunt/tour/virtual/coalsack/>
- <https://pursuit.unimelb.edu.au/articles/coins-and-constellations?fbclid=IwAR14RcXu3XJ6BWbCfdVTl84GI9F0pAtLQS4kkwBZGNKJnTYSFT2pB3FEeA>

QUESTION 3

Answer: A A Great Basin bristlecone pine tree.

The oldest single living thing on Earth is a 5,067-year-old Great Basin bristlecone pine tree in California's White Mountains. A handful of sequoia trees in California are over 3,000 years old, the oldest giant tortoise is 193 years old, and the oldest Greenland shark ever recorded is 400 years old.

MORE INFORMATION

- <https://www.bbc.com/news/science-environment-40224991>
- <https://www.rmtrr.org/oldlist.htm>
- <https://www.britannica.com/animal/Jonathan-giant-tortoise>
- <https://www.bbc.com/news/science-environment-37047168>

QUESTION 4

Answer: D Childbirth.

Chainsaws were not originally invented to cut wood, but instead, bone and cartilage during childbirth. At the time, it was known as an 'osteome' and was used during surgical interventions on the mother if the baby became stuck in the birth canal.

MORE INFORMATION

- <https://www.sciencefocus.com/science/why-was-the-chainsaw-invented>
- https://books.google.co.uk/books?id=pAllAAAAcAAJ&pg=PA70&source=gbs_toc_r&cad=4#v=onepage&q&f=false

QUESTION 5

Answer: False

There is no strong scientific evidence to suggest that mixing alcohol leads to a worse hangover. The only conclusive cause for a worse hangover is being more drunk. Who would have thought?

MORE INFORMATION

- <https://www.sciencedirect.com/science/article/pii/S0002916522031215>
- <https://www.popsci.com/health/alcohol-myths/#:~:text=That%20feeling%20of%20warming%20is,in%20the%20world%2C%20behind%20caffeine.>

Answers

QUESTION 6

Answer: A Goat's bladder.

Sources describe the first use of a condom by King Minos of Crete, who used a goat's bladder to protect Pasiphae, his wife, from the 'scorpions and serpents' in his semen that were said to kill his mistresses.

MORE INFORMATION

- <https://pmc.ncbi.nlm.nih.gov/articles/PMC3649591/>

QUESTION 7

Answer: B Backwards.

The balloon travels backwards, in the opposite direction as you (and anything else in the car), because the helium inside the balloon is less dense than the air around it. When the car stops, air is pushed forward, creating higher pressure at the front. The less dense helium balloon moves toward the lower-pressure region at the back.

MORE INFORMATION:

- <https://www.iflscience.com/you-have-a-helium-balloon-in-your-car-what-direction-does-it-go-when-you-accelerate-78598>

QUESTION 8

Answer: B They are extremely strong.

Research has shown that spinifex contains nanometre-scale cellulose fibres that are long, flexible, and exceptionally strong. Under the microscope, these fibres are only a few nanometres thick but can have a tensile strength up to 8 times greater than steel!

MORE INFORMATION

- <https://stories.uq.edu.au/research/2023/the-desert-lab-and-its-spinifex-secrets/index.html>

QUESTION 9

Answer: D All of the above.

For a long time, people thought that caffeine was the main driver of coffee's laxative effect. In fact, it is due to a variety of factors, including the acids in coffee, the stimulation of peristalsis, and the release of gastrin.

MORE INFORMATION

- <https://www.health.harvard.edu/healthy-aging-and-longevity/why-does-coffee-help-with-digestion>
- <https://health.clevelandclinic.org/why-does-coffee-make-you-poop>
- <https://www.facebook.com/share/v/1B8BNGEo1B/>

QUESTION 10

Answer: B No, it mostly just fizzes and the ingredients cancel each other out.

When vinegar (an acid) and baking soda (a base) are mixed, they react to form water, a salt, and carbon dioxide gas, which creates the fizz. When added in equal amounts, this reaction mostly cancels out their cleaning power. Using vinegar or baking soda separately would be more effective for most cleaning purposes than mixing them together.

MORE INFORMATION

- <https://theconversation.com/vinegar-and-baking-soda-a-cleaning-hack-or-just-a-bunch-of-fizz-225177>

QUESTION 11

Answer: C Guinness beers are carbonated using a mix of carbon dioxide and nitrogen.

Many beers are carbonated using only carbon dioxide. However, Guinness uses a combination of carbon dioxide and nitrogen, which produces smaller, finer bubbles that lead to its iconic thick, creamy head.

MORE INFORMATION

- <https://www.guinness-storehouse.com/en/whats-happening/most-popular-questions-about-guinness>

Answers

QUESTION 12

Answer: C To find alternative ventilation methods during respiratory crises like COVID-19.

Researchers were looking for new ways to ventilate patients when traditional airways are compromised. They found that in mammals, the intestinal lining can absorb oxygen under the right conditions, but this hasn't been tested in humans.

MORE INFORMATION

- <https://www.sciencefocus.com/news/ig-nobel-prize-2024>
- <https://www.sciencedirect.com/science/article/pii/S2666634021001537?via%3Dihub>
- <https://www.science.org/content/article/mammals-can-breathe-through-their-intestines>

QUESTION 13

Answer: False

A smooth ball would travel about half the distance. The dimples deliberately create turbulence at the surface of the ball, which keeps airflow clinging to the ball for longer, reducing the drag.

MORE INFORMATION

- <https://www.scientificamerican.com/article/how-do-dimples-in-golf-ba/>

QUESTION 14

Answer: B Dogs trigger the same love hormone that bonds parents to babies.

Dogs have evolved big eyes and rounder baby-like faces, which trigger oxytocin, the same hormone that connects parents to newborns. Brain scans show that our brains respond to our fur-babies the same way we respond to our own babies.

MORE INFORMATION

- <https://www.nationalgeographic.com/animals/article/dogs-furbabies-evolution-science>

QUESTION 15

Answer: C The stars.

First Nations peoples use star patterns to memorise long-distance travel routes through song (known as songlines). When European explorers arrived, they followed Aboriginal guides along these same routes. Other landmarks, like waterholes, also help. Over time, these routes became tracks, then roads, then the highways we drive on today.

MORE INFORMATION

- <https://theconversation.com/how-ancient-aboriginal-star-maps-have-shaped-australias-highway-network-55952>

QUESTION 16

Answer: Radio waves

Bluetooth works by sending radio wave signals between devices. Did you know Bluetooth was named after a Viking, King Harald Bluetooth?

MORE INFORMATION

- <https://theconversation.com/what-is-bluetooth-and-how-does-it-work-242892>

QUESTION 17

Answer: C 30,000 years.

Some areas, such as Cuddie Springs in NSW, contain grinding stones that are more than 30,000 years old. That's about 15,000 years ahead of the first signs of bread-making in ancient Egypt!

MORE INFORMATION

- <https://australian.museum/blog-archive/science/food-culture-aboriginal-bread/>

Answers

QUESTION 18

Answer: C Becoming longer.

Climate change is causing the length of days on Earth to increase by 1.33 milliseconds per century. As glaciers melt and oceans rise, mass that was once at the planet's poles is being redistributed toward Earth's mid-latitudes, changing how fast the Earth spins. While it may not sound like much, even small changes to the Earth's spinning speed can create challenges in areas such as space navigation, which requires extremely accurate information about the Earth's rotation.

MORE INFORMATION

- <https://www.scientificamerican.com/article/earths-days-are-getting-longer-climate-change-is-to-blame/>

QUESTION 19

Answer: B Uses a large internal weight that moves opposite to the building's sway.

A tuned mass damper is a large weight inside a building that acts like a pendulum, swinging in the opposite direction to the building's movement. This counter-motion helps absorb energy and reduce the building's sway in strong winds.

MORE INFORMATION

- <https://theconversation.com/curious-kids-whats-the-tallest-skyscraper-its-possible-to-build-116817>

QUESTION 20

Answer: A Severe diarrhea and food poisoning.

Yellow soup was fed to patients to treat severe diarrhoea and food poisoning, long before scientists understood the role of gut microbes. Nowadays, faecal transplants (poo transplants) are sometimes used to restore healthy gut bacteria in patients with recurrent *Clostridioides difficile* infections.

MORE INFORMATION

- <https://asm.org/articles/2024/february/faecal-microbiota-transplants-past-present-future>
- https://journals.lww.com/ajg/citation/2012/11000/should_we_standardize_the_1,700_year_old_fecal.26.aspx



Thanks for joining tens of thousands of people across Australia in completing a Brain Break! Brain Breaks are just one way to celebrate National Science Week. Held annually in August, National Science Week is Australia's largest science festival. Over 3 million people participate in 2,500+ events around the country to celebrate all things science.

Find more events near you by visiting:
scienceweek.net.au

We'd love to hear your feedback on these questions! Share your thoughts with us:

E scienceweek@questacon.edu.au
P 02 6270 9749

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