



national science week 2026



An Australian Government Initiative



BRAIN BREAKS 2026

SECONDARY
(YEAR 7-10)

QUESTION 1

Which animal kills the most people each year?

- A** Mosquitoes
 - B** Snakes
 - C** Humans
 - D** Freshwater snails
-

QUESTION 2

If you were lucky enough to see a meteorite land, and ran up and touched it 30 seconds later, would it feel hot or cold?

Hot Cold

QUESTION 3

The deep sea is full of strange-looking creatures that have evolved to survive in cold, dark and high-pressure environments far beneath the ocean surface. Which of the following is not an animal found in the deep sea?

- A** Bloody-belly comb jelly
 - B** Common siphonophore
 - C** Pigbutt worm
 - D** Red handfish
-

QUESTION 4

True or false: Hair on the heads of people in the southern hemisphere is more likely to swirl anti-clockwise than that of people in the northern hemisphere.

True False

QUESTION 5

True or false: Lightning never strikes the same place twice.

True False

QUESTION 6

True or false: When people are lost in the bush, local rescuers will sometimes seek the help of First Nations peoples to find them.

True False

QUESTION 7

First Nations peoples use the Brewarrina Fish Traps (Baiaame's Ngunnhu) in NSW to catch fish. How do the Fish Traps work?

- A** By blocking the entire river so fish cannot move
 - B** By using stone walls to guide fish into ponds where they can be easily caught
 - C** By trapping fish in nets suspended above the water
 - D** By draining sections of the river
-

QUESTION 8

Why doesn't a bird sitting on a high-voltage power line get electrocuted?

- A** They have a protective, non-conductive layer of scaly flesh on their feet
 - B** They stand on one foot, so the electricity can't make a circuit
 - C** Electricity can't travel from the wire to the bird unless it's wet
 - D** The bird's body is already at the same voltage of electricity as the wire, so no current flows into it
-



QUESTION 9

What is the maximum number of times you can fold a standard sheet of A4 paper in half?

- A 5 times
 - B 10 times
 - C 7 times
 - D 10 times
-

QUESTION 10

What volume of spit does the average adult produce per day?

- A Up to 30 mL
 - B 50–150 mL
 - C 300–400 mL
 - D 500–1,500 mL
-

QUESTION 11

Tjupan women from Western Australia collect sweet, tangy honey from honeypot ants to use as food and medicine. What property of this honey helps explain why it is effective in treating sore throats and wounds?

- A It is very cold
 - B It contains compounds that can kill some bacteria
 - C It is very salty
 - D It glows in the dark
-

QUESTION 12

Approximately how many species of bacteria live in the average person's belly button?

- A 2
 - B 47
 - C 67
 - D 113
-

QUESTION 13

In 2023, scientists won an Ig Nobel Prize for studying whether geologists should lick rocks. What was the scientific verdict?

- A Never, it damages the rock
 - B Only if wearing personal protective equipment (PPE)
 - C Licking rocks is a legitimate field technique
 - D Licking is approved for sedimentary rocks only
-

QUESTION 14

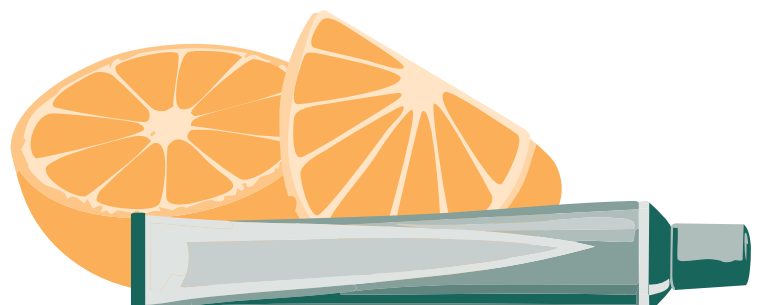
Why do First Nations peoples in south-east Australia time the harvesting of bark for canoes to occur after winter rains?

- A The bark is thicker and heavier
 - B The sap makes the bark more flexible and less likely to crack
 - C The trees grow faster in winter
 - D The bark becomes waterproof immediately
-

QUESTION 15

Why does orange juice taste so bad after you brush your teeth?

- A Toothpaste contains a detergent that disrupts the lipid membranes of your taste buds
- B Toothpaste contains mint flavouring that binds to the same receptors as orange juice, so orange flavours can no longer bind to the receptors
- C The foam from toothpaste creates a thin layer on your tongue that repels orange juice
- D The mint flavouring in toothpaste increases saliva production, which dilutes the orange flavour of juice and makes it taste different



QUESTION 16

When your favourite song gives you chills, what is happening in your brain?

- A Your brain temperature drops slightly
 - B Your nervous system briefly mistakes music for danger
 - C Your heart rate syncs with the beat
 - D Your brain releases dopamine
-

QUESTION 17

What causes static shocks?

- A Chemicals: your body creates a small chemical reaction with the surface you touch, producing a brief sting.
 - B Electricity: there is electrostatic discharge caused by electrons jumping from a negatively charged object to a positively charged one.
 - C Heat: heat builds up from friction from your feet and is released as a quick burst of energy when you make contact with a surface.
 - D Pressure: tiny bursts of air pressure are created when your body moves quickly between different temperatures.
-

QUESTION 18

NASA's Voyager 1 spacecraft was launched in 1977. It is now the furthest human-made object in space. Approximately how far is it from Earth?

- A 150 million kilometres (the distance from Earth to the Sun)
 - B 1 billion kilometres
 - C 25 billion kilometres
 - D 1 trillion kilometres
-

QUESTION 19

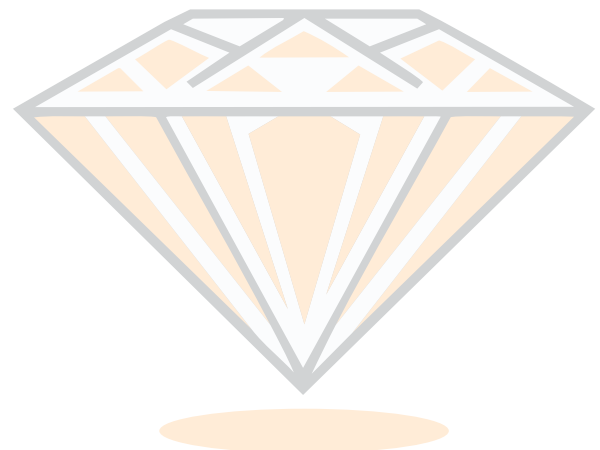
Diamonds are the hardest naturally occurring substance on Earth, so what do we use to cut diamonds?

- A Lasers and blades coated with other diamonds
 - B High-pressure jets of water
 - C Corrosive chemicals that slowly etch away the diamond surface
 - D A specialty blade made of Damascus steel
-

QUESTION 20

What is the most expensive substance on planet Earth?

- A Red diamonds
- B Californium-252
- C Samples of asteroid Bennu
- D Antimatter



Answers

QUESTION 1

Answer: A Mosquitoes.

Mosquitoes are responsible for the deaths of over 725,000 people each year by spreading diseases such as malaria. Humans are the second most dangerous animals when it comes to killing people, with over 400,000 deaths due to homicide.

MORE INFORMATION:

- <https://www.sciencefocus.com/nature/what-animals-kills-the-most-people>

QUESTION 2

Answer: Cold!

Even though they are (briefly) described as fireballs in the sky, they have spent billions of years flying through very cold space. While their surface heats up and melts as they plummet through the atmosphere, this journey is very quick. A bit like deep-frying ice cream, their journey through the atmosphere is too quick to warm the whole meteorite up, so it will very quickly feel cold again once it lands on Earth. The Colby (Wisconsin) and Dharmasala (India) meteorites are reported to have been quickly coated with frost, even though both fell on hot days in midsummer.

MORE INFORMATION

- <https://www.wtamu.edu/~cbaird/sq/2012/12/13/what-makes-meteorites-so-hot-that-you-cant-touch-them/>
- <https://www.gi.alaska.edu/alaska-science-forum/cold-meteorites>

QUESTION 3

Answer: D Red handfish.

The red handfish (*Thymichthys politus*) is not found in the deep sea, but in small patches of reef in south-eastern Tasmania. It's one of the world's rarest fish species, with a total population of only ~100 adults. Despite living much closer to the surface than their deep-sea friends, red handfish are still strange-looking in their own right, described as 'a toad in brightly coloured paint, telling a sad story, and forced to wear gloves 2 sizes too big,' according to the Handfish Conservation Project.

MORE INFORMATION

- <https://handfish.org.au/species-overview/>

QUESTION 4

Answer: True

Researchers compared hair whorls in children from France (northern hemisphere) and Chile (southern hemisphere). While the majority of children had clockwise hair whorls in both countries, the percentage with anti-clockwise hair whorls was higher in Chile (28%) than in France (4%). While the exact cause is uncertain, the findings suggest that hair whorl formation is influenced by both genetic and environmental factors.

MORE INFORMATION

- <https://doi.org/10.1016/j.jormas.2023.101664>
- <https://www.scientificamerican.com/article/does-the-coriolis-effect-cause-your-cowlick/#:~:text=The%20scientists%20compared%2037%20pairs,kids%20had%20a%20counterclockwise%20whorl.>

QUESTION 5

Answer: False

This common misconception is false. Lightning actively seeks out tall, pointy and isolated objects and hits them repeatedly. The Empire State Building is struck around 100 times a year.

MORE INFORMATION

- <https://sma.nasa.gov/docs/default-source/safety-messages/lightning-safety-presentation.pdf>

QUESTION 6

Answer: True

First Nations peoples have a unique connection to Country, and can sometimes notice small things that others miss, like unusual smells, or footprints in the sand. In 1864, 2 Whadjuk people helped find 3 children who had been lost in the bush for 9 days, more than a century before mobile phones and GPS existed.

MORE INFORMATION

- <https://www.commonground.org.au/article/the-first-scientists>
- <https://www.smh.com.au/opinion/tracks-lead-back-to-an-incredible-story-of-survival-20140814-1047fm.html>

Answers

QUESTION 7

Answer: B By using stone walls to guide fish into ponds where they can be easily caught.

The traps use carefully arranged stone walls to guide fish moving through the river into holding ponds. This design allows fish to be caught efficiently using spears or by hand, while also adapting to changing water levels and seasons.

MORE INFORMATION

- <https://www.mpra.com.au/brewarrina-fish-traps>

QUESTION 8

Answer: D The bird's body is already at the same voltage of electricity as the wire, so no current flows into it.

For the bird to get electrocuted, there must be a voltage difference for electricity to flow through the conductor (in this case, the bird). When a bird perches on a power line, its whole body is at the same voltage, so no current flows through its body. However, if the bird (or a person) touched a broken power line on the ground, then it would get electrocuted due to the voltage difference between the bird (or a person) and the ground.

MORE INFORMATION

- <https://sciencedemonstrations.fas.harvard.edu/presentations/bird-high-voltage-transmission-line#:~:text=Although%20the%20bird%20on%20the%20wire%20would,thus%20the%20bird%20does%20not%20get%20electrocuted.>

QUESTION 9

Answer: C 7 times.

Folding an A4 piece of paper more than 7 times is extremely difficult. This is because each time you fold the paper, the number of layers doubles over and over again, and the paper rapidly gets too thick and too small to fold. This is an example of exponential growth. A high-school student was able to set the record at 12 folds, but this was using a piece of tissue paper that was more than a kilometre long!

MORE INFORMATION

- <https://www.sciencefocus.com/science/whats-the-maximum-number-of-times-that-you-can-fold-a-piece-of-paper>

QUESTION 10

Answer: D 500–1,500 mL.

The average adult produces about 500–1,500 mL, or 2–6 cups, of saliva per day. That's enough to fill 2 or more small water bottles!

MORE INFORMATION

- <https://pmc.ncbi.nlm.nih.gov/articles/PMC5052503/>

QUESTION 11

Answer: B It contains compounds that can kill some bacteria.

Honey from honeypot ants can kill certain bacteria, including golden staph, and some fungi.

MORE INFORMATION

- <https://www.abc.net.au/news/2023-12-17/research-finds-honey-ants-effective-against-infections/103214054>
- <https://mbantua.com.au/bush-tucker/>

Answers

QUESTION 12

Answer: C 67.

The average person has 67 different species of bacteria in their belly button! Scientists swabbed 66 people's belly buttons and found 2,368 different bacteria species in total, with each person hosting around 67.

MORE INFORMATION

- <https://www.natgeokids.com/au/discover/science/general-science/15-facts-about-the-human-body/>

QUESTION 13

Answer: C Licking rocks is a legitimate field technique.

A wet tongue highlights the rock surface, allowing fossil and mineral textures to stand out. This dates to the 18th-century Italian Giovanni Arduino, who wrote descriptions of a multitude of flavours experienced by tasting the burnt, boiled or dissolved remains of his rock specimens. But don't try this without training – some rocks can contain harmful materials, like lead.

MORE INFORMATION

- <https://le.ac.uk/news/2023/september/ig-nobel-zalasiewicz>

QUESTION 14

Answer: B The sap makes the bark more flexible and less likely to crack.

After rainfall, increased sap flow in the tree makes the bark more pliable, allowing it to be removed in large sheets and shaped without breaking.

MORE INFORMATION

- <https://australian.museum/learn/first-nations/watercraft-culture/>

QUESTION 15

Answer: A Toothpaste contains a detergent that disrupts the lipid membranes of your taste buds.

Toothpaste typically includes the detergent sodium lauryl sulfate, which aids in removing dental plaque. However, it also disrupts the lipid bilayer in the cell membranes of taste receptors, altering your taste perception.

MORE INFORMATION

- <https://theconversation.com/why-does-orange-juice-taste-bad-after-you-brush-your-teeth-271741>

QUESTION 16

Answer: D Your brain releases dopamine.

Music can trigger dopamine, which is the brain's reward chemical. It's the same chemical that gets released with other rewarding stimuli, such as food.

MORE INFORMATION

- <https://theconversation.com/chills-and-thrills-why-some-people-love-music-and-others-dont-24007>

QUESTION 17

Answer: B Electricity: there is electrostatic discharge caused by electrons jumping from a negatively charged object to a positively charged one.

Static shocks happen when electrical energy builds up on your body, usually from friction, like walking on carpet. This creates an imbalance of electric charge, and when you touch something conductive, the extra charge suddenly jumps across. That movement of electrons is what you feel as a small shock.

MORE INFORMATION

- <https://theconversation.com/why-do-i-get-static-shocks-from-everyday-objects-is-it-my-shoes-240554>

Answers

QUESTION 18

Answer: C 25 billion kilometres.

Voyager 1 is more than 25 billion kilometres from Earth, which is beyond our Solar System, in interstellar space. It is so far away that its radio signals, travelling at the speed of light, take over 23 hours to reach us!

MORE INFORMATION

- <https://science.nasa.gov/mission/voyager/>
- <https://www.jpl.nasa.gov/news/nasa-turns-off-two-voyager-science-instruments-to-extend-mission/>

QUESTION 19

Answer: A Lasers and blades coated with other diamonds

Diamonds are mainly cut using lasers, but can also be cut using special blades coated with other diamonds.

MORE INFORMATION

- <https://pursuit.unimelb.edu.au/articles/diamonds-the-hard-facts>

QUESTION 20

Answer: D Antimatter.

Although you can't technically buy antimatter, it is the most expensive substance on Earth, costing \$59.8 trillion per gram. Its astronomically high cost is because it can only be manufactured artificially in particle accelerators such as CERN's Large Hadron Collider, which produces less than a nanogram of antimatter per year. But that doesn't mean the other options aren't expensive – red diamonds would cost you about \$4.7 million per gram, samples of asteroid Bennu are \$9.6 million per gram, and Californium-252 is an eye-watering \$25.6 million per gram.

MORE INFORMATION

- <https://sciencefocus.com/planet-earth/the-7-most-expensive-substances-ever-found-on-planet-earth>



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:

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