

Quiz: elemental pursuit

How much do you know about the chemical elements? Each of the following questions highlights how a particular element is used or their role in our world – can you identify the elements?

All of the elements in this quiz have been described in various *Science in School* articles, which are all you will need to complete the quiz. You can search through and read all the articles at <https://www.scienceinschool.org>

For each question, note the element name, the issue number and title of the article in which you found the information, then give one more fact about the element.

Questions

- 1. Which dangerous element is used at facilities such as the European X-ray Free-Electron Laser Facility (European XFEL) to focus X-ray beams?**

Element

Issue number and article title

Additional fact

- 2. Which transition metal has been used to strengthen samurai swords and tank armour, and is also vital for plant and animal life?**

Element

Issue number and article title

Additional fact

- 3. Which toxic element is responsible for the vibrant yellows of many Vincent van Gogh paintings?**

Element

Issue number and article title

Additional fact

Additional material for:

Cheng MHK (2019) Quiz: elemental pursuit. *Science in School* 47: 38-40.
www.scienceinschool.org/2019/issue47/PTquiz

4. **Which element helped Clyde Cowan and Frederick Reines detect neutrinos from radioactive beta decay for the first time in 1956?**

Element

Issue number and article title

Additional fact

5. **The only stable isotope of which element is used to define seconds, the standard unit for time?**

Element

Issue number and article title

Additional fact

6. **Mixing which element with salt water results in an exothermic reaction that can be used to warm up self-heating meal packs?**

Element

Issue number and article title

Additional fact

7. **Which metal with a high melting point is used to line the walls of the Joint European Torus (JET) and ITER nuclear fusion reactors?**

Element

Issue number and article title

Additional fact

8. **Which element and its radioisotope allow scientists to study gene regulation and adaptation in long-lived neurons?**

Element

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Issue number and article title

Additional fact

- 9. Which element is essential for the synthesis of thyroid hormones that regulate growth, development and cell metabolism?**

Element

Issue number and article title

Additional fact

- 10. Atoms of which element were fired into berkelium (element 97) by German scientists to try to create the predicted element 119 (ununennium)?**

Element

Issue number and article title

Additional fact

- 11. Which trace metal is now rarely used in thermometers because of its toxicity?**

Element

Issue number and article title

Additional fact

- 12. Which element can be found in computer hard drives and is used in the most powerful permanent magnets known?**

Element

Issue number and article title

Additional fact

Additional material for:

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13. Which Group 1 metal is commonly found as part of rechargeable batteries in cell phones and laptops?

Element

Issue number and article title

Additional fact

14. Which element allows scientists to reconstruct past climates based on the ratio of the element's isotopes in the 'rings' of mollusc seashells?

Element

Issue number and article title

Additional fact

15. Which element is considered a potential energy carrier of the future, and can be released from food waste by microorganisms?

Element

Issue number and article title

Additional fact

16. 'Doping' which element with phosphorus or boron can alter its conductivity?

Element

Issue number and article title

Additional fact

17. Which element is allowed into neurons and muscle cells, in a controlled way, to create an action potential?

Element

Additional material for:

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www.scienceinschool.org/2019/issue47/PTquiz

Issue number and article title

Additional fact

18. Which mineral is present at around 5 mg per 100 g of fresh mushrooms?

Element

Issue number and article title

Additional fact

19. Which element can exit neuron cells via specialised ion channels to restore a resting membrane potential?

Element

Issue number and article title

Additional fact

20. Ions of which common metallic element are found in Fehling's solution, used to detect the presence of reducing sugars (fructose, glucose or lactose)?

Element

Issue number and article title

Additional fact

21. Which element has more stable oxidation states than any other transition metal?

Element

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Additional fact

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22. NASA uses which inert gaseous element to protect extraterrestrial samples from contamination during investigations?

Element

Issue number and article title

Additional fact

23. Which element forms free radicals which speed up the reaction that destroys ozone in the stratosphere?

Element

Issue number and article title

Additional fact

24. Which rare metal took chemists Ida Tacke and Walter Noddack three years to isolate 120 mg of?

Element

Issue number and article title

Additional fact

25. Which element can be used to thinly coat plastics in order to give them a ‘structural colour’?

Element

Issue number and article title

Additional fact

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