

## Quiz: elemental pursuit

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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

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Issue number and article title

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Additional fact

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

Element

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Issue number and article title

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Additional fact

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

Element

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Issue number and article title

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Additional fact

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Additional material for:

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

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Issue number and article title

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Additional fact

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

Element

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Issue number and article title

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Additional fact

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

Element

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Issue number and article title

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Additional fact

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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

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Issue number and article title

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Additional fact

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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

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Additional fact

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

Element

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Issue number and article title

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Additional fact

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

Element

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Issue number and article title

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Additional fact

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

Element

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Issue number and article title

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Additional fact

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

Element

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Issue number and article title

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Additional fact

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

Element

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Issue number and article title

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Additional fact

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**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

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Issue number and article title

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Additional fact

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

Element

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Issue number and article title

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Additional fact

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

Element

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Issue number and article title

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Additional fact

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

Element

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Issue number and article title

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Additional fact

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

Element

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Issue number and article title

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Additional fact

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

Element

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Issue number and article title

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Additional fact

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**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

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Issue number and article title

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Additional fact

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

Element

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Issue number and article title

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

Element

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Issue number and article title

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Additional fact

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

Element

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Issue number and article title

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Additional fact

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

Element

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Issue number and article title

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Additional fact

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

Element

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Issue number and article title

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