Answer sheet: elemental pursuit

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?**

* Beryllium (Be)
* Elements in the spotlight: beryllium (issue 45)  
  [www.scienceinschool.org/content/elements-spotlight-beryllium](http://www.scienceinschool.org/content/elements-spotlight-beryllium)

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

* Molybdenum (Mo)
* Elements in the spotlight: molybdenum (issue 41)  
  [www.scienceinschool.org/content/elements-spotlight-molybdenum](http://www.scienceinschool.org/content/elements-spotlight-molybdenum)

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

* Chromium (Cr)
* Van Gogh’s darkening legacy (issue 19)  
  [www.scienceinschool.org/2011/issue19/vangogh](http://www.scienceinschool.org/2011/issue19/vangogh)
* Erin Brockovich (issue 4)  
  <https://www.scienceinschool.org/2007/issue4/erinbrockovich>

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

* Cadmium (Cd)
* Neutrinos: an introduction (issue 19)  
  <https://www.scienceinschool.org/2011/issue19/neutrinos>

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

* Caesium (Cs)
* SI units: a new update for standards (issue 45)  
  <https://www.scienceinschool.org/2011/issue19/neutrinos>
* Weighing up the evidence: what is a kilo (issue 25)  
  <https://www.scienceinschool.org/2012/issue25/metrology>

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

* Magnesium (Mg)
* The heat is on: heating food and drinks with chemical energy (issue 18)  
  <https://www.scienceinschool.org/2011/issue18/lncu>

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

* Tungsten (W)
* Super cold meets super hot (issue 29)  
  <https://www.scienceinschool.org/2014/issue29/pellets>
* A thermometer that goes to 200 million degrees (issue 26)  
  <https://www.scienceinschool.org/2013/issue26/fusion>

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

* Carbon (C)
* The element of surprise (issue 37)  
  <https://www.scienceinschool.org/content/element-surprise>

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

* Iodine (I)
* Purple fumes: the importance of iodine (issue 27)  
  <https://www.scienceinschool.org/2013/issue27/iodine>

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

* Titanium (Ti)
* The numbers game: extending the periodic table (issue 25)  
  <https://www.scienceinschool.org/2012/issue25/periodic>

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

* Mercury (Hg)
* Mercury: a poisonous solution (issue 7)  
  <https://www.scienceinschool.org/2007/issue7/mercury>

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

* Neodymium (Nd)
* Adventures in creative recycling (issue 45)  
  <https://www.scienceinschool.org/content/adventures-creative-recycling>

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

* Lithium (Li)
* Towards a better lithium-ion battery (issue 33)  
  <https://www.scienceinschool.org/content/towards-better-lithium-ion-battery>

1. **Which element allows scientists to reconstruct past climates based on the ratio of the element’s isotopes in the ‘rings’ of mollusc seashells?**

* Oxygen (O)
* Opening seashells to reveal climate secrets (issue 35)  
  <https://www.scienceinschool.org/content/opening-seashells-reveal-climate-secrets>

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

* Hydrogen (H)
* Hydrogen: the green energy carrier of the future? (issue 22)  
  <https://www.scienceinschool.org/2012/issue22/hydrogen>

1. **‘Doping’ which element with phosphorus or boron can alter its conductivity?**

* Silicon (Si)
* Solar energy: silicon solar cells (issue 23)  
  <https://www.scienceinschool.org/2012/issue23/solar>

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

* Calcium (Ca)
* What happens when cells embrace damage? (issue 38)  
  <https://www.scienceinschool.org/content/what-happens-when-cells-embrace-damage>

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

* Sodium (Na)
* Natural experiments: chemistry with mushrooms (issue 42)  
  <https://www.scienceinschool.org/content/natural-experiments-chemistry-mushrooms>

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

* Potassium (K)
* The resting potential: introducing foundations of the nervous system (issue 38)  
  <https://www.scienceinschool.org/content/resting-potential-introducing-foundations-nervous-system>

1. **Ions of which common metallic element is found in Fehling’s solution, used to detect the presence of reducing sugars (fructose, glucose or lactose)?**

* Copper (Cu)
* Detecting sugar: an everyday problem when facing diabetes (issue 9)  
  <https://www.scienceinschool.org/2008/issue9/diabetes>
* Spectrometry at school: hands-on experiments (issue 14)  
  <https://www.scienceinschool.org/2010/issue14/spectrometer>

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

* Manganese (Mn)
* Colourful chemistry: redox reactions with lollipops (issue 43)  
  <https://www.scienceinschool.org/content/colourful-chemistry-redox-reactions-lollipops>

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

* Nitrogen (N)
* The challenging logistics of lunar exploration (issue 31)  
  <https://www.scienceinschool.org/content/challenging-logistics-lunar-exploration>

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

* Chlorine (Cl)
* A hole in the sky? (issue 17)  
  <https://www.scienceinschool.org/2010/issue17/ozone>

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

* Rhenium (Re)
* In their element: women of the periodic table (issue 47)  
  <https://www.scienceinschool.org/2019/issue47/PTelements>

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

* Aluminium (Al)
* Structural colour: peacocks, Romans and Robert Hooke (issue 33)  
  <https://www.scienceinschool.org/content/structural-colour-peacocks-romans-and-robert-hooke>