



1 A student made a cell by placing a piece of magnesium and a piece of copper in a beaker of sodium chloride solution. The student joined the electrodes with a wire. A voltage of 2.72 V was measured.

- a What type of particles carries the current through the wires? **electrons**
- b What type of particles carries the current through the electrolyte? **ions**
- c Which metal is the positive electrode? Explain your answer.

copper – it is less reactive and so releases fewer electrons

2 A student made some cells using metals **A**, **B** and **C** and measured their voltages.

positive electrode	negative electrode	voltage / V
A	B	+0.63
C	B	+0.25

- a Place the metals in order of reactivity. *most reactive* **B C A** *least reactive*
- b What would be the voltage if **A** was connected to **C**, and which would be the positive electrode?

voltage = **+0.38 V**

positive electrode = **A**

3 A hydrogen fuel cell is an excellent source of electrical energy. The half equations are shown:



- a Write an equation for the overall reaction. **$2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$**
- b Give an advantage of a hydrogen fuel cell compared to a rechargeable cell.

it provides a continuous supply of electricity without needing to be recharged