9E Reactions of Metals and Metal Compounds – Lesson 1 Metals

Week commencing 14th May 2012

Year 8

Title: Metals

Objectives: describe and explain the properties and uses of some metals

- I must be able to state some properties of metals
- I should be able to carry out an experiment to investigate the conductivity of different metals
- I should be able to apply the properties of specific metals to their uses

Can you think of some properties of metals?

- Can you remember which metals are magnetic?
  - Iron
  - Cobalt
  - Nickel

Homework – for tomorrow

- Homework books – in full sentences
  - E1 – Questions 2 and 5 (a,b,c **not d**)

We are going to look at a demo to investigate how well different metals conduct heat

- Turn to the first page of your workbooks

- Write a method, the results observed and a conclusion
- Answer Q2 and 3

- Afterwards – turn over the page and answer Q2 by writing out the information and then writing your answer

Answers

① Silver has the highest electrical conductivity but would be too expensive to use on a large scale. Copper is used most widely because it has the second highest electrical conductivity but is more widely available and cheaper than silver. Aluminium is used for overhead cables because it is less dense than copper, even though it is not such a good conductor.

② Sodium has a low melting point and so can be used as a liquid at temperatures of over 100 °C, unlike most other metals. Its thermal capacity is low compared to other metals, but these could not be used as coolants because they would not melt until much higher temperatures. It can be pumped easily because it is not very dense.

③ Tungsten has a very high melting point so will not melt when it gets hot. Pupils may also link its high density to the likelihood that it will be very hard.

④ Copper is a very good conductor of heat so that the heat is passed to the water easily.

Plenary: make a table with 2 columns – "Metals" and "Non-metals" and put the correct descriptions in

Solid at room temperature (except Mercury)	Soft or brittle when solid
Have low density	Strong
Most have low melting or boiling points	Usually not that strong
Most have high density and high boiling points	Are shiny and are good conductors of heat and electricity
Mostly poor conductors of heat and electricity	Can be stretched and bent without breaking

Metals	Non-Metals
Can be stretched and bent without breaking	Soft or brittle when solid
Are shiny and are good conductors of heat and electricity	Most have low melting or boiling points
Strong	Mostly poor conductors of heat and electricity
Most have high density and high boiling points	Have low density
Solid at room temperature (except Mercury)	Usually not that strong