Reactivity Series and Metals

The key areas of study in this topic are:

- The Reactivity Series and reactions of metals
- Extraction of metals
- Recycling
- Corrosion prevention

By the end of this topic I should be able to:	Start	End
4.1 Deduce the relative reactivity of some metals, by their reactions with water, acids and salt solutions		
4.2 Explain displacement reactions as redox reactions, in terms of gain or loss of electrons		
4.3 Explain the reactivity series of metals in terms of the reactivity of the metals with water and dilute acids and that these reactions show the relative tendency of metal atoms to form cations		
4.4 Recall that: • most metals are extracted from ores found in the Earth's crust • unreactive metals are found in the Earth's crust as the uncombined elements		
4.5 Explain oxidation as the gain of oxygen and reduction as the loss of oxygen		
4.6 Recall that the extraction of metals involves reduction of ores		
4.7 Explain why the method used to extract a metal from its ore is related to its position in the reactivity series and the cost of the extraction process, illustrated by a) heating with carbon (including iron) and b) electrolysis (including aluminium)		
4.8 Evaluate alternative biological methods of metal extraction		
4.9 Explain how a metal's relative resistance to oxidation is related to its position in the reactivity series		
4.10 Evaluate the advantages of recycling metals, including economic implications and how recycling can preserve both the environment and the supply of valuable raw materials		
4.11 Describe that a life time assessment for a product involves consideration of the effect on the environment of obtaining the raw materials, manufacturing the product, using the product and disposing of the product when it is no longer useful		
4.12 Evaluate data from a life cycle assessment of a product		
5.1C Recall that most metals are transition metals and that their typical properties include: • high melting point • high density • the formation of coloured compounds • catalytic activity of the metals and their compounds as exemplified by iron		
5.2C Recall that the oxidation of metals results in corrosion		
5.3C Explain how rusting of iron can be prevented by: a) exclusion of oxygen b) exclusion of water c) sacrificial protection		
5.6C Explain why iron is alloyed with other metals to produce alloy steels		
5.7C Explain how the uses of metals are related to their properties (and vice versa), including aluminium, copper and gold and their alloys including magnalium and brass		