Extraction of metals: Worksheet 4.3

Extraction techniques and discovery dates

The table lists data for three metals with very different reactivities.

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| **Metal** | **Discovery date** | **Extraction method** |
| Gold | Thousands of years ago | Separate from surrounding rocks |
| Zinc | 1500 | Reduce its oxide by heating it with carbon |
| Sodium | 1807 | Melt its compounds and use electrolysis to decompose them |

1. Explain why the extraction technique used for gold is so simple.

1. Zinc is obtained by ‘reducing’ zinc oxide. Explain what this means.

1. The equation for the reduction of zinc oxide is:

2ZnO + C → CO2 + 2Zn

 Copper (II) oxide can also be reduced by carbon. Write an equation for the reaction.

1. Explain why sodium could not be extracted before the 1800s.

1. When aluminium was first extracted, the reaction used was:

aluminium oxide + sodium → sodium oxide + aluminium

 Which substance is reduced during this reaction?