



METAL EXTRACTION 1

1) Most metals are extracted from ores.

a) Why does gold not need to be extracted from ores?

occurs as an element as it is unreactive

b) Iron is extracted from an ore. What is an ore?

compound from which a metal can be extracted for profit

2) Calcium is extracted from calcium chloride by electrolysis.

a) Explain why calcium cannot be extracted by heating calcium chloride with carbon.

calcium is more reactive than carbon

b) Explain why this extraction involves a reduction reaction.

calcium ions gain electrons ($\text{Ca}^{2+} + 2\text{e}^- \rightarrow \text{Ca}$)

3) One method of extracting zinc involves the reaction of zinc oxide with carbon. Explain, both in terms of oxygen and electrons, why this extraction involves reduction.

**zinc ions gain electrons ($\text{Zn}^{2+} + 2\text{e}^- \rightarrow \text{Zn}$)
zinc oxide loses oxygen**

4) Lead is extracted by the reduction of lead oxide by heating with carbon: $\text{PbO} + \text{C} \rightarrow \text{Pb} + \text{CO}$

a) Explain why lead can be extracted by heating with carbon.

lead is less reactive than carbon

b) Explain why this is a redox reaction

**lead oxide loses oxygen
carbon gains oxygen**