

## Production of Metals

- Metals exist in the earth's crust either as native metals (elements) or minerals (compounds).
- The rocks and sand in which metal deposits are found are known as ores.
- Metal ores are mined from the earth's crust, then metals are extracted from the ore.
- The form in which a metal exists in an ore depends on its chemical reactivity.
  - The least reactive metals, such as gold, silver and copper, usually exist as native metals.
- They only need to undergo physical separation processes to be extracted.
  - More reactive metals, such as iron and aluminium, exist as minerals.
- They need to undergo chemical separation processes to be extracted.
- The type of chemical process for extracting metals from minerals depends on how reactive the metal is.
  - Metals with an intermediate reactivity, such as iron and zinc, are obtained by carbon reduction – a type of displacement (redox) reaction carried out at high temperatures.
  - The most reactive metals, such as aluminium and magnesium, are obtained by electrolysis – a process which requires the input of electric current.
- Once extracted, metals undergo further refining (purification).