



1 Write word equations for these reactions of calcium.

- a calcium + oxygen → **calcium oxide**
- b calcium + nitric acid → **calcium nitrate + hydrogen**
- c calcium + water → **calcium hydroxide + water**

2 Copper will displace silver from a solution of silver nitrate: $\text{Cu} + 2\text{AgNO}_3 \rightarrow \text{Cu}(\text{NO}_3)_2 + 2\text{Ag}$

- a Explain why copper is more reactive than silver.
copper atoms lose electrons more easily than silver atoms do
- b Write an ionic equation for this reaction. **$\text{Cu} + 2\text{Ag}^+ \rightarrow \text{Cu}^{2+} + 2\text{Ag}$**
- c Write two half equations for this reaction. **$\text{Cu} - 2\text{e}^- \rightarrow \text{Cu}^{2+}$ $\text{Ag}^+ + \text{e}^- \rightarrow \text{Ag}$**
- d Explain why this is a redox reaction.
copper atoms lose electrons = oxidation
silver ions gain electrons = reduction

3 Write balanced equations for the reactions in question 1.

- a **$2\text{Ca} + \text{O}_2 \rightarrow 2\text{CaO}$**
- b **$\text{Ca} + 2\text{HNO}_3 \rightarrow \text{Ca}(\text{NO}_3)_2 + \text{H}_2$**
- c **$\text{Ca} + 2\text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2 + \text{H}_2$**