Solutions

Each answer shows the steps, then the **result**.

2.1

- acid + carbonate → **salt + water + carbon dioxide**

2.2

- litmus in alkali is **blue**

2.3

- hydrogen ions, H^+

2.4

- a **salt** and **water**

3.1 D

- pH 2 is **strongly acidic**
- A is pH 12–14; B is pH 7; C is about pH 4–6

3.2

(a)

- a **strong** acid is **fully dissociated** in water
- a **weak** acid is only **partly dissociated**

(b)

- $\mathbf{HCl}(aq) \rightarrow \mathbf{H^+}(aq) + \mathbf{Cl^-}(aq)$

3.3

- magnesium + sulfuric acid → **magnesium sulfate** and **hydrogen**

3.4

(a)

- Q (pH 7) is neutral
- R (pH 4) is a weak acid

(b)

- **purple** (strongly alkaline)

3.5

- $H^+(aq) + OH^-(aq) \rightarrow H_2O(l)$

3.6

- calcium carbonate + hydrochloric acid → calcium chloride + water + carbon dioxide
- fizzing (bubbles of gas), and the solid disappears