- It controls variables like water temperature and measures the time more precisely.

2. **(b) Why should they take care when adding hot water at 65°C?**
   - To avoid burns and ensure safety while handling hot liquids.

Page 31: Measuring Dissolution Time

1. **(c) How did the cross help to make their test more accurate?**
   - It provided a consistent endpoint to determine when the tea was dissolved.
2. **(d) Results Table:**
   - The recorded part of the investigation is the **results**.
3. **(e) Order of dissolution times:**
   - **Quickest:** Triangle → **Second:** Circle → **Slowest:** Square.

age 32: Solubility Graph

1. **(i) Compare the solubility of sodium chloride and potassium chloride in the range 10°C to 90°C:**
   - Potassium chloride's solubility increases significantly as temperature rises, from about 20 g/100 cm^3 at 10°C to around 50 g/100 cm^3 at 90°C.
   - Sodium chloride's solubility remains relatively constant, increasing only slightly from about 35 g/100 cm^3 to around 40 g/100 cm^3 over the same range.
2. **(ii) Ken cooled a solution containing 54 g of potassium chloride in 100 cm^3 of water to 40°C. What would he see in the beaker?**
   - **Observation:** Crystals of potassium chloride would form.
   - **Explanation:** At 40°C, the solubility of potassium chloride is about 40 g/100 cm^3, so the excess 14 g of potassium chloride would precipitate out of the solution.

Page 33: Salt Deposition

1. **(i) Evidence that the salts were deposited at a temperature above 25°C:**
   - From the graph, all three salts are more soluble at higher temperatures, allowing for their deposition as water evaporated.
2. **(ii) Order of deposition at 10°C:**
   - **Top:** Potassium chloride
   - **Middle:** Sodium chloride
   - **Bottom:** Calcium sulphate

Page 34: Separating Seawater

1. **(a) True or False Statements:**
   - Water is a solvent for salt: **True**
   - Sand sinks in water because water is more dense than sand: **True**
   - When a solid dissolves in water, the solid is called a solute: **True**
2. **(b) How can Amy collect pure water from seawater?**
   - Use **distillation**: Heat the seawater to evaporate the water, then condense the water vapor back into a liquid, leaving the salt behind.

Page 35: Substance Groups

1. **Match substances to groups and descriptions:**
    - **Seawater → Mixture:** It contains two or more types of atoms or molecules which can be physically separated.
    - **Salt → Compound:** Two or more types of atoms are chemically joined together.
    - **Oxygen → Element:** It contains only one type of atom.

Page 36: Stefan's Snow Observations

1. **(a) Complete the sentence:**
    - Snowflake changes from a **solid** to a **liquid** when it melts.
2. **(ii) Why does snow melt faster on Stefan's nose?**
    - The heat from Stefan's body warms the snow faster than the surrounding air temperature.
3. **(iii) Are the following changes reversible?**
    - Ice melting: **Yes**
    - Wood burning: **No**
    - Toasting bread: **No**

Page 37: Gas in a Container

1. **(a) How can you tell it's a gas and that it's pure?**
    - **Gas:** Particles are widely spaced and move freely.
    - **Pure:** All particles are identical (same size and type).
2. **(b) How does Diagram B show increased pressure?**
    - The particles are compressed into a smaller volume, increasing collisions with the container walls.

Page 38: Boiling Point Investigation

1. **(i) Independent variable:**
    - Mass of salt dissolved in water.
2. **(ii) Dependent variable:**
    - Boiling point of the salt solution.
3. **(iii) Variable with least effect:**
    - Temperature of the laboratory.

Page 39: Graph Comparison

1. **(i) How can you tell pure water was used?**
    - Both graphs show a boiling point of 100°C when no salt is added.
2. **(ii) Why is Tom's line of best fit better?**
    - Tom's line of best fit is straighter and closer to the data points, indicating more consistent results.