Separating mixtures

Name _____ Date _____

Key ideas

Choose a separation method by comparing properties such as solubility, particle size, boiling point or attraction to a magnet. A physical separation does not require a chemical reaction.

Worked examples

How can clean water be collected from salty water?

Use simple distillation. Water evaporates, travels to a condenser and collects as liquid, while most dissolved salt stays in the flask.

How can sand be separated from water?

Use filtration. The sand stays on the filter as residue and the water passes through as filtrate.

Practice questions

Show your reasoning. Each question is worth 2 marks.

1. Identify a method for removing gravel from water and explain why it works.

2. Which physical property allows a magnet to separate steel pins from wooden beads? Explain.

3. Explain why a filter cannot remove dissolved sugar from water.

4. Describe how to collect sugar crystals from a concentrated solution without boiling it dry.

5. Explain how a separating funnel can isolate oil from water.

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6. Why should the ink start line in paper chromatography be drawn in pencil and placed above the solvent?

7. A dye travels 24 mm while the solvent front travels 60 mm. Calculate its Rf value and state whether the value has units.

8. A flask holds muddy water with some dissolved salt. Describe how to collect clear, low-salt water.

9. A mixture contains iron filings, insoluble chalk and soluble salt. Give a procedure to recover the salt.

10. Two dyes have the same Rf value in one solvent. Explain why that result alone does not prove they are identical and suggest a follow-up.