GRADE 7 SCIENCE

Separation — Full Revision

Name: Date:

INQUIRY

Every separation technique works because substances have different PHYSICAL PROPERTIES. This revision tests your understanding of all five techniques.

Discuss with your partner. Write your initial ideas below:

Key Vocabulary

Term	Definition
Filtration	Separates insoluble solid from liquid.
Evaporation	Gets the solute from a solution.
Distillation	Gets pure solvent from a solution.
Chromatography	Separates colours/substances by solubility.
Purity	Only ONE substance. Sharp melting/boiling point.

Section 1 — Mixtures & Solutions (8 marks)

1. Define: solute, solvent, solution, saturated. Give an example for each using Chinese green tea. [4 marks]

2. Explain why sugar dissolves faster in hot water than cold water, using particle theory. [2 marks]

3. Classify as solution or suspension: (a) Korean soju (b) Yangtze River water (c) sparkling water. [2 marks]

Section 2 — Techniques (12 marks)

4. State the best technique for each separation and explain your choice: (a) Mud from flood water in Nanjing (b) Salt from Korean sea water (c) Pure water from the Yellow River (d) Identifying dyes in German candy. [4 marks]

5. Describe the full process of simple distillation to obtain pure water from salt water. Include a labelled diagram in the box below. [4 marks]

6. Chromatography: dye A travels 3.6 cm, dye B travels 6.0 cm, solvent travels 8.0 cm. Calculate Rf for both dyes. [2 marks]

Show your working:

7. Explain why filtration CANNOT separate salt from salt water but CAN separate sand from water. [2 marks]

Section 3 — Purity (8 marks)

8. A sample melts at 115-120 degrees C. The known melting point of the pure substance is 118 degrees C. (a) Is the sample pure? (b) What is your evidence? (c) Would the boiling point be higher or lower than expected? [3 marks]

9. Nanjing tap water is treated with chlorine to kill bacteria. (a) Is the treated water pure in the scientific sense? (b) How could you produce truly pure water from it? (c) Would the pure water be safe to drink long-term? Why might minerals matter? [3 marks]

10. A Korean food inspector discovers an unknown substance in a snack. Design a testing procedure using at least TWO separation/analysis techniques to identify it. [2 marks]