

Filtration

Name:

Date:

INQUIRY

Nanjing's tap water comes from the brown, muddy Yangtze River. How does the treatment plant make it clear and safe?

Discuss with your partner. Write your initial ideas below:

Key Vocabulary

Term	Definition
Filtration	Separating an insoluble solid from a liquid using filter paper.
Filtrate	The liquid that passes through the filter.
Residue	The solid left behind on the filter paper.

Part A — Knowledge

1. Describe the steps of filtration in the correct order. Include: filter paper, funnel, beaker, residue, filtrate. [3 marks]

2. A student filters a mixture of sand and water. (a) What is the residue? (b) What is the filtrate? (c) Would this work for salt water? Explain. [3 marks]

Part B — Real-World Filtration

3. Nanjing water treatment uses sand filtration, gravel filtration, and activated charcoal. Explain why they use MULTIPLE stages rather than just one. [3 marks]

4. During the COVID-19 pandemic, people in China, Korea, and Germany all wore face masks. Explain how a mask works as a FILTER. What is the 'residue' and what is the 'filtrate'? [3 marks]

Part C — Design Challenge

5. You are given muddy water, sand, gravel, cotton balls, a plastic bottle, and charcoal. Design a simple water filter. Draw a labelled diagram and explain the role of each layer. [5 marks]