Year 6 Science Assessment: Separating Mixtures

Learning objective: To understand, identify, and describe methods for separating mixtures, including filtering, sieving, and evaporating.

Read each question carefully. Use your scientific knowledge to explain your answers clearly. Write your responses in the spaces provided.

Max the monkey has been busy in the kitchen! He accidentally mixed a bowl of sand and water, and another bowl of salt and water. Meanwhile, Bea the honeybee is trying to separate a mixture of large pebbles and fine sand to help build a new hive foundation. Use your knowledge of mixtures to help Max and Bea solve their problems.

Word bank: Solution · Soluble · Insoluble · Filter · Evaporation · Residue · Sieve · Mixture

1. Max has a mixture of sand and water. Explain why sand is considered 'insoluble' in this mixture. (2 marks) (2 marks)

2. Describe the process Max should use to separate the sand from the water. Name the piece of equipment he will need. (3 marks) (3 marks)

3. Bea needs to separate large pebbles from fine sand. Which method should she use, and why is this method suitable for these specific materials? (4 marks) (4 marks)

4. Max has a salt solution. Explain how he can recover the solid salt from the water. What is the name of this scientific process? (4 marks) (4 marks)

5. Is it possible to separate a mixture of two liquids, like water and squash? Explain your reasoning using the terms 'soluble' or 'solution'. (3 marks) (3 marks)

6. Extended Writing: Imagine you are a scientist working with Nova the owl. Describe a step-by-step experiment to separate a complex mixture containing iron filings, salt, and water. Use scientific vocabulary such as 'filter', 'evaporate', and 'magnetic' in your explanation. (9 marks total - 4 for method, 5 for scientific accuracy and use of terminology). (9 marks)

Draw: Draw a labelled diagram showing how to filter a mixture of sand and water. Ensure you label the 'filter paper', 'funnel', 'residue', and 'filtrate'.

Extension challenge: Total: /25. Think about how we use these processes in everyday life. Can you list three ways that separation methods are used in a professional kitchen or a water treatment plant?