

Year 5 Science Assessment: Separating Mixtures

Learning objective: To demonstrate an understanding of mixtures, solutions, and methods of separation including filtering, sieving, and evaporation.

Read each question carefully. Use the word bank to help you construct your scientific explanations. Ensure your answers use correct scientific terminology.

Max the monkey has been experimenting in his science lab. He has accidentally mixed together a variety of materials: sand, salt, iron filings, and water. He needs your help to separate these components back into their original states.

Word bank: soluble · insoluble · solution · mixture · filtering · sieving · evaporation · dissolve · residue · filtrate

1. Define the term 'mixture' in your own words. Give one example of a mixture you might find in your kitchen. (2 marks)

2. Max has a bowl containing sand and large pebbles. Which separation method should he use to isolate the pebbles? Explain why this method is effective. (2 marks)

3. When Max adds salt to water, it disappears. Explain the process that occurs here and name the resulting liquid. (2 marks)

4. If Max has a beaker containing a mixture of water and insoluble sand, describe a step-by-step method he could use to separate the sand from the water. (4 marks)

5. Compare and contrast 'filtering' and 'sieving'. In what scenario would you choose to use one over the other? (4 marks)

6. After separating the sand from the salt water, Max is left with a solution of salt and water. Justify why filtering will not remove the salt from the water. What method must he use instead to retrieve the salt? (4 marks)

7. Max wants to recover the salt from the water. Write a scientific procedure explaining how 'evaporation' works to achieve this. Consider the state of matter of the water during this process. (5 marks)

Draw: Draw a labelled diagram showing how you would set up a piece of filter paper in a funnel to separate a mixture of mud and water. Label the 'filtrate' and the 'residue'.



Extension challenge: Max is now tasked with separating a mixture of sawdust (which floats) and iron filings (which are magnetic). Propose a creative, multi-step plan to separate these materials effectively. Explain why your chosen methods will work based on the properties of the materials. Total: /25