

Nova's Guide to Mixtures

Learning objective: To understand how mixtures can be separated and why some substances can be dissolved.

Read the passage carefully and answer the questions below. Ensure you use full sentences for your answers.

Nova the barn owl loves investigating how things mix together. A mixture is made when two or more substances are combined, but they do not turn into something new. For example, if you stir sand into a bucket of water, it is a mixture. The sand will eventually sink because it does not dissolve. However, if you add salt to water and stir, the salt seems to vanish. This is called a solution. The salt is the solute, and the water is the solvent.

Separating mixtures is a brilliant scientific skill. If you have a mixture of marbles and sand, Nova suggests using a sieve to separate them by size. If you have a solution, like salt water, a sieve will not work because the salt particles are too small to catch. Instead, you must use evaporation. By leaving the salty water in a warm, sunny spot, the water turns into vapour and disappears, leaving the dry salt crystals behind. Whether using a filter or heat, separating mixtures shows us how physical properties help us organize the world around us.

Word bank: mixture · solution · dissolve · solute · solvent · evaporation · sieve · filter

1. What is the difference between a mixture where the substance sinks and a solution where it dissolves? (2 marks)

2. Why would a sieve be useless for separating salt from water? (2 marks)

3. Based on the text, why is evaporation considered a more effective method than sieving for salt water? (2 marks)

4. Explain why Nova might describe a mixture as 'not turning into something new'. (2 marks)

5. If you had a mixture of dried pasta shapes and flour, which separation method would you choose and why? (2 marks)

Draw: Draw a scientific diagram showing Nova the owl performing an experiment to separate a mixture of pebbles and water using a filter.



Extension challenge: Research and write a short paragraph explaining how a process called 'distillation' works, and identify one real-life example of where it is used.