

Nova's Marvellous Mixture Investigation

Learning objective: To identify, describe, and understand how to separate different types of mixtures including solutions, suspensions, and reversible changes.

Join Nova the owl in the laboratory! Answer these ten questions to test your knowledge of how substances mix and how we can separate them back again.

Answer Key: 1. C (Mixture), 2. True, 3. False (it forms a solution), 4. Filtration, 5. Soluble, 6. False (it is a reversible change), 7. Evaporation, 8. True, 9. Sieve, 10. A (Insoluble).

Word bank: Soluble · Insoluble · Solution · Filtration · Evaporation · Sieve · Dissolve · Mixture · Suspension · Residue

1. 1. Nova mixes sand and water in a beaker. What is the scientific term for this combination? A) A pure substance B) A chemical reaction C) A mixture* D) A solid (1 mark)

2. 2. True or False: A solution is a special type of mixture where one substance dissolves completely into another. (1 mark)

3. 3. True or False: When sugar is stirred into hot tea, the sugar disappears and the mixture becomes a suspension. (1 mark)

4. 4. Which separation method would you use to remove sand from water? (One-word answer) (1 mark)

5. 5. If a substance can be dissolved in a liquid, we describe it as being _____. (One-word answer) (1 mark)

6. 6. True or False: Dissolving salt in water is an irreversible change. (1 mark)

7. 7. Which process would you use to recover salt from a salty water solution? (One-word answer) (1 mark)

8. 8. True or False: A sieve is most effective for separating mixtures containing solids of different particle sizes. (1 mark)

9. 9. If you were separating dried pasta from water, which piece of equipment would be best to use? (One-word answer) (1 mark)

10. 10. Which word describes a substance that does not dissolve in water? A) Insoluble* B) Soluble C) Transparent D) Evaporated (1 mark)

Draw: Draw a laboratory diagram showing Nova the owl using a funnel and filter paper to separate a mixture of muddy water. Label the 'filtrate' and the 'residue'.



Extension challenge: Greater Depth Challenges: 1. Explain why heating a solution might speed up the process of evaporation. 2. Compare and contrast the properties of a mixture like salt water with a mixture like sand and water. 3. Justify your answer: Is it possible to separate a mixture of iron filings and sand using a magnet? Explain the science behind your decision. 4. What might happen if you tried to filter a solution like sugar water? Would the sugar be captured by the filter paper? Why or why not? 5. Design an experiment to separate a mixture containing salt, sand, and pebbles. List your steps in order. 6. If you were a scientist, why would understanding mixtures be important when cleaning contaminated water for a village?