Mastering Mixtures: Science Flashcards with Nova the Owl

Learning objective: To identify, describe, and understand how to separate different types of mixtures, including solids, liquids, and gases.

Use these flashcards to test your knowledge of mixtures and separation techniques. Nova the Owl suggests reading the front carefully before attempting to explain the scientific process on the back.

What is a mixture?

A mixture is a substance made by combining two or more different materials that are not chemically joined together.

Define a 'solution'.

A solution is a special type of mixture where a solid has dissolved into a liquid and cannot be seen separately.

What is the difference between a solute and a solvent?

The solute is the substance being dissolved (e.g., salt), and the solvent is the liquid that does the dissolving (e.g., water).

Which method would you use to separate sand from water?

Filtration, using a filter paper or a fine mesh to catch the solid particles while the liquid passes through.

How can you recover salt from a salty water solution?

By using evaporation, where the water turns into vapour, leaving the solid salt crystals behind.

What does it mean if a change is 'reversible'?

It means the materials can be changed back to their original state, such as melting ice back into water or separating a mixture.

Explain why sieving is useful for mixtures of solids.

Sieving is used to separate solid particles of different sizes, where the smaller particles fall through the holes of the sieve and larger ones stay behind.

If a mixture contains iron filings and sand, how could you separate them?

By using magnetism, as the iron filings will be attracted to the magnet while the sand will not.

Justify why adding sugar to hot water makes it dissolve faster than in cold water.

Heat increases the kinetic energy of the water molecules, allowing them to collide with the sugar particles more frequently and break them down more quickly.

Compare and contrast a solution and a suspension.

In a solution, the solute dissolves completely and is transparent; in a suspension, the particles do not dissolve and will eventually settle at the bottom.

What might happen if you tried to filter a solution like sugar water?

Nothing would be separated, as the sugar particles are dissolved and are small enough to pass through the filter paper along with the water.

Explain why mixing vinegar and bicarbonate of soda is an irreversible change.

It creates a new substance (carbon dioxide gas) and a chemical reaction occurs that cannot easily be turned back into the original ingredients.