

Nova's Laboratory: Investigating Mixtures

Learning objective: To identify and illustrate different types of mixtures, including solutions, and understand how to separate solids from liquids using filtration and evaporation.

Use the drawing space provided below to create a scientific diagram of a separation experiment. Follow the steps carefully to show how different materials interact when mixed.

Draw: Create a clear, scientific diagram on a landscape-oriented page. On the left, draw a beaker showing a mixture of sand and salt water. Use stippling (small dots) to represent the sand at the bottom. In the centre, draw a funnel set into a stand with filter paper inside. Show a liquid dripping through into a clean beaker below. Use neat, straight lines for labels and ensure all scientific apparatus is clearly identifiable.



Label words: Solute · Solvent · Solution · Insoluble · Filtrate · Residue · Evaporation · Mixture

Steps:

1. Step 1: Draw a beaker containing water, sand, and dissolved salt. Label the solute and the solvent.
2. Step 2: Draw a funnel with filter paper above a second beaker. Label the 'residue' left in the paper and the 'filtrate' that passes through.
3. Explain why the salt does not stay in the filter paper during the filtration process.
4. Justify your answer: How could Nova recover the solid salt from the salty water (filtrate)?

5. Compare and contrast: What is the difference between a mixture that is a solution and a mixture that contains insoluble solids?
6. What might happen if Nova tried to filter a mixture of salt and water using a standard sieve instead of filter paper? Explain your reasoning.