

Choosing a method to separate mixtures

Grade 6 science (Year 7 · Class 6) · Lab answers

Use these answers to check your calculations from the sample table. Percentages are worked out from the starting mass, not the final mass. When you suggest a source of loss, name a real step in the method.

Level: Grade 6 science (Year 7 · Class 6) · **Curriculum:** MS-PS1-2

Question 1 Total recovered

$2.9 + 14.8 + 11.2 = 28.9$ g. Percentage = $28.9 \div 30.0 \times 100 = \mathbf{96.3\%}$.

Question 2 Percentage for each part

Iron: $2.9 \div 3.0 \times 100 = \mathbf{96.7\%}$. Sand: $14.8 \div 15.0 \times 100 = \mathbf{98.7\%}$. Salt: $11.2 \div 12.0 \times 100 = \mathbf{93.3\%}$.

Question 3 Largest loss

Salt (93.3 %). Some salt stayed on the glassware and in the damp sand, and some may have spat out of the dish.

Question 4 Why the magnet first?

While the mixture is dry the filings are easy to lift out. In water the filings would rust and mix with the wet sand, **so the magnet comes first**.

Question 5 Where is the salt?

The filtrate contains the dissolved salt in water. The salt particles are tiny, so they pass through the paper with the water, **so evaporation is needed**.

Question 6 Missing mass

$30.0 - 28.9 = \mathbf{1.1\text{ g}}$. Some of it stuck to glassware and the filter paper, and some salt was left in the damp sand.

Question 7 Improve the lab

Rinse the sand and the beaker with a little more water and add the rinse to the filtrate, so more salt is recovered. **This reduces the loss of salt**.