

Year 7 Science – Unit Overview

Mixtures and Separation

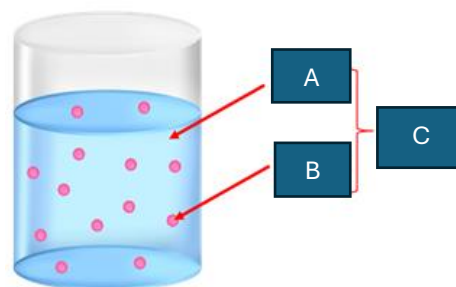
Unit Summary

In this topic, students learn about pure substances and mixtures. Through practical experiments, students use separation techniques such as filtration, evaporation, distillation and chromatography to separate different mixtures, including extracting salt from salty water. Alongside this, they develop important laboratory skills, practise working safely with equipment such as Bunsen burners, and begin applying simple mathematical skills when calculating results such as R_f values.

20 questions to ask or encourage your child to turn them into flashcards.

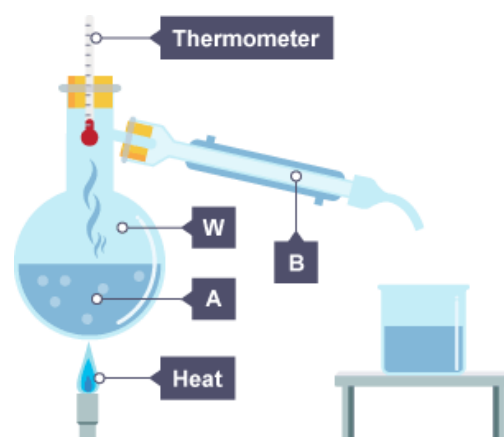
Answers on the reverse.

1. Salt is soluble in water. What does 'soluble' mean?
2. Is salt more soluble in hot or cold water?
3. What process would you need to use to separate salt from salty water?



4. What is the opposite of soluble?
5. Label A, B and C in the picture
(Clue: solution, solute, solvent)
6. How many spots will a pure substance produce in chromatography?
7. In chromatography, a substance will travel higher up the paper if it is more _____
8. In chromatography, how can you tell if a substance is insoluble?
9. In chromatography, what should the start line be drawn using and why?
10. In chromatography, if you change the solvent to one in which the substance is **less** soluble, what will happen to the distance it travels up the paper?

11. Name the separation technique pictured:
12. In the picture, what is the piece of equipment labelled B?
13. Name the state change that happens from A to W
14. Name the state change happens in B
15. What is the boiling point of water?
16. What is filtration used to separate?
17. For filtration, you need a conical flask and what two other pieces of equipment?
18. What separation technique would you use to separate sand and water?
19. What separation technique would you use to collect pure water from sea water?
20. What separation techniques and in what order would you use to separate all the components in a mixture of sand *and* sea water?



Further information on this topic:

<https://www.bbc.co.uk/bitesize/articles/zs9sp4j - zcm4r2p>

<https://youtu.be/WuC3HJkj6uo?si=ypRbTtaqR5Eado0Z>

<https://youtu.be/CK1KVYLIGRE?si=LRJ8fzLIGvZG9wox>

https://youtu.be/dBb0aWXhArk?si=Oo7HL-n_q5akXFux

Answers

1. Soluble means something **can** dissolve.
2. Hot water
3. Evaporation
4. Insoluble
5. A = solvent, B = solute, C = solution
6. One spot
7. In chromatography, a substance will travel higher up the paper if it is more **soluble**
8. The spot stays on the start line.
9. Pencil as it is insoluble. Pen will smudge up the paper.
10. The substance will travel less far up the paper.
11. Distillation
12. Condenser
13. Boiling / evaporation
14. Condensation / condensing
15. 100°C
16. An *insoluble* solid and a liquid
17. Filter paper and funnel
18. Filtration
19. Distillation
20. Step 1: filtration to separate the sand. Step 2: distillation to separate the salt and water (you could do evaporation too, but you would lose the water)

