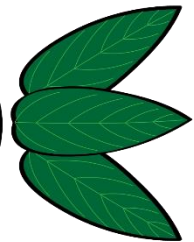
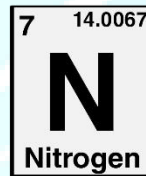
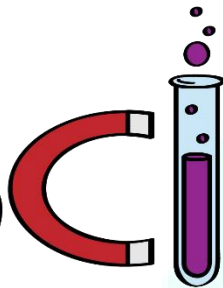
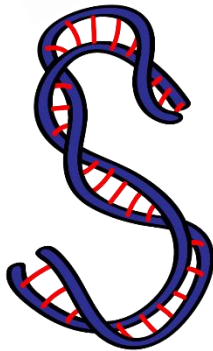




**ASPIRE**  
INTERNATIONAL SCHOOL



Science Department

2023/2024

Year 7

Term 3, Weeks 4-5

ASPIRE

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Name: .....

Class: .....

## > 2.1 Dissolving

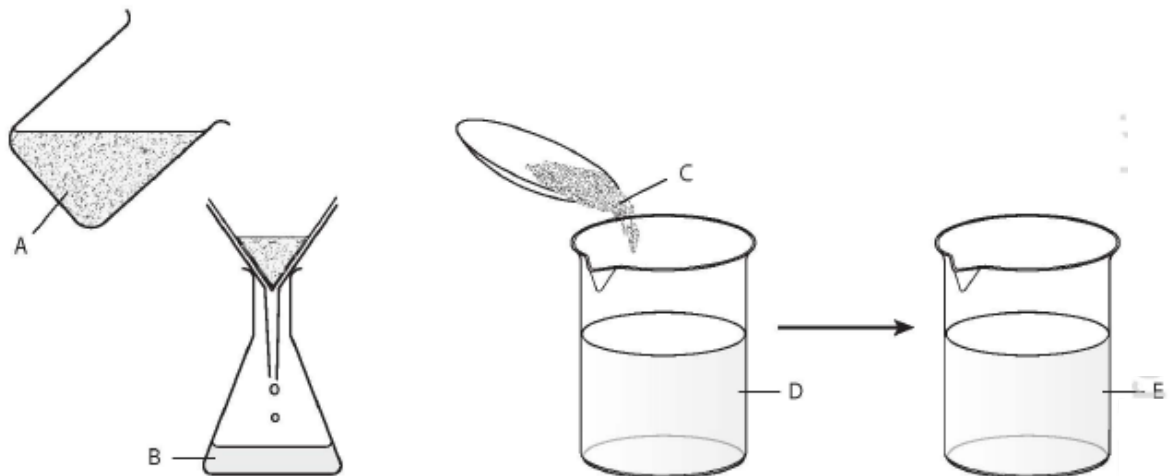
### Exercise 2.1A Using the correct scientific term

#### Focus

This exercise will help you to use the correct scientific terms.

Use the terms given below to label the diagrams. Each term may be used once, more than once or not at all.

**dissolves**      **solution**      **filtrate**      **solute**  
**mixture**      **solvent**      **solid**      **volume**



- A .....
- B .....
- C .....
- D .....
- E .....

## Exercise 2.1B What is the difference between these terms?

### Practice

In this exercise, you will practise explaining the difference between terms.

- 1 Explain the difference between the terms transparent and opaque.

.....  
.....

- 2 Explain the difference between the terms dissolving and melting.

.....  
.....

- 3 Distinguish between the terms solute, solvent and solution.

.....  
.....  
.....

## Exercise 2.1C Explaining observations

### Challenge

In this exercise, you will explain the reasons behind some observations.

When 20 g of salt is added to a beaker containing 100 g of water the salt dissolves and seems to disappear as a solution is formed.

- 1 What is the mass now? .....

- 2 Explain your answer.

.....  
.....

## > 2.2 Solutions and solubility

### Exercise 2.2A Using the correct scientific term

#### Focus

This exercise will help you to use the correct scientific terms.

Use the terms given below to complete the sentences. Each term may be used once, more than once or not at all.

**concentrated**

**solubility**

**saturated solution**

**soluble**

**insoluble**

**diluted**

- 1 A substance that will not dissolve in water is .....
- 2 Solution A has more solute particles in it than solution B. Solution A is more ..... than solution B.
- 3 Sofia has added more and more copper sulfate to a beaker of water until no more will dissolve. She has made a ..... of copper sulfate.
- 4 Copper sulfate dissolves in water so it is said to be ..... in water.
- 5 Marcus has added 50 cm<sup>3</sup> water to a solution of sodium chloride. He has ..... the solution.

OL

## > 2.3 Planning a solubility investigation

### Exercise 2.3A Dissolving salt

#### Focus

In this exercise, you will interpret a graph and spot mistakes.


Marcus and Sofia are investigating how much salt they can dissolve in different volumes of water.

The volume of water they use is the independent variable.

This is what they do. Sofia measures out the volume of water. Marcus places the beaker of water on a top pan balance and adds salt, one spatula at a time, until no more dissolves. He measures the mass of salt added.

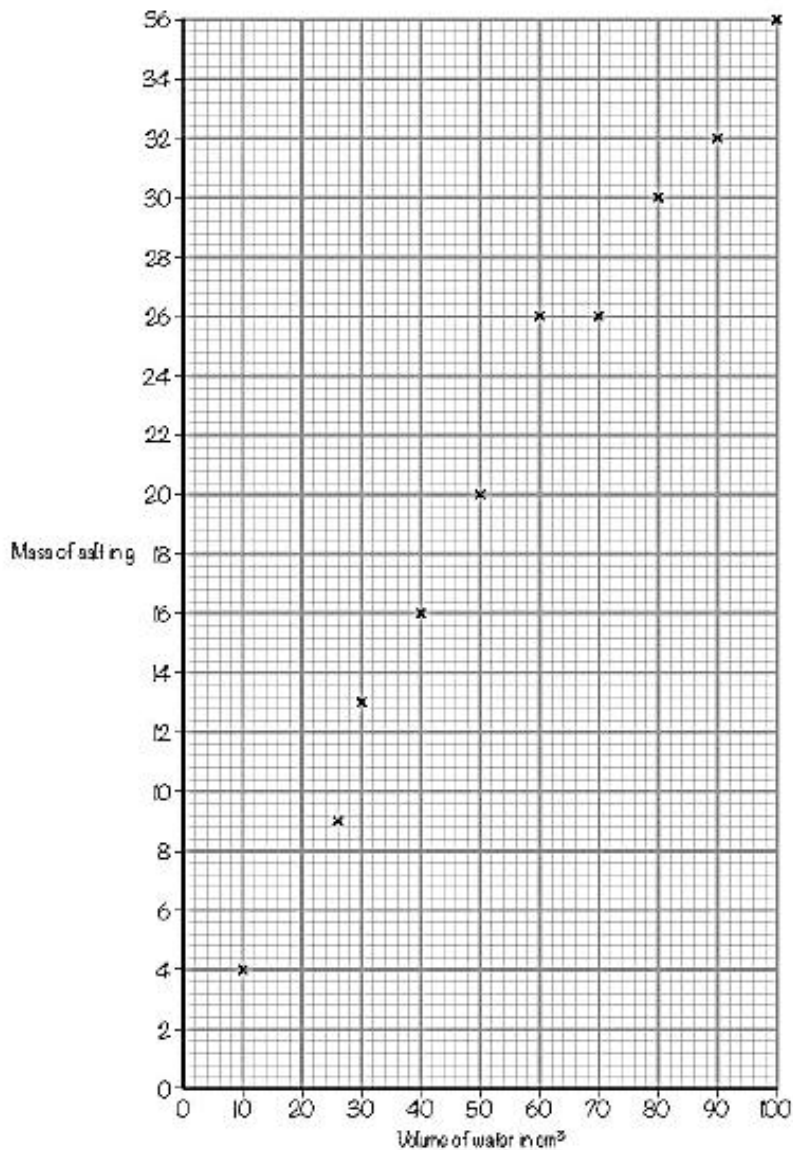
Here is their table of results.

| Volume of water in $\text{cm}^3$ | Mass of salt in g |
|----------------------------------|-------------------|
| 10                               | 4                 |
| 20                               | 9                 |
| 30                               | 13                |
| 40                               | 16                |
| 50                               | 20                |
| 60                               | 26                |
| 70                               | 26                |
| 80                               | 30                |
| 90                               | 32                |
| 100                              | 36                |



If we use more water I think more salts will dissolve.

Marcus plots this graph from their results.



1 What was Sofia's prediction?

.....

2 Which reading is plotted incorrectly? Draw a **red** circle around it on the graph.

3 Which other point does not fit the pattern of the graph? Draw a **blue** circle around this mass reading in the table, and around the point on the graph.

4 Draw a line of best fit.

100L

5 Describe what the graph shows.

.....  
.....  
.....

6 Was Sofia's prediction correct?

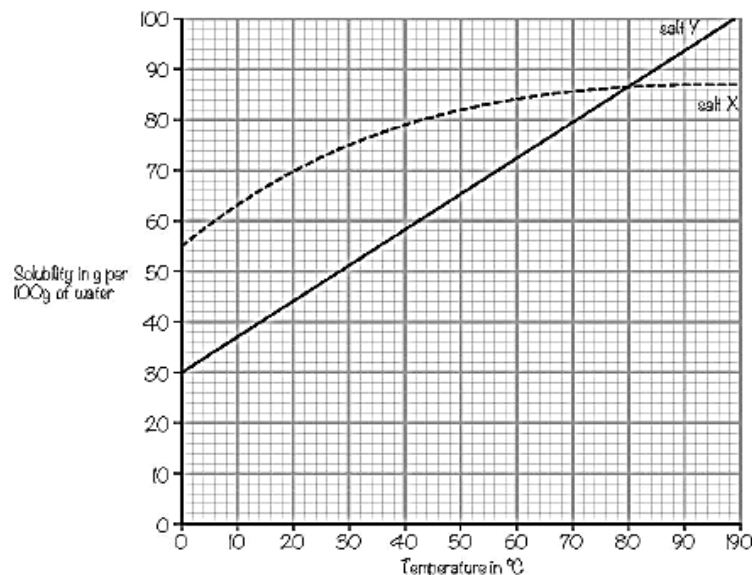
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## Exercise 2.3C Comparing the solubility of two salts: part 2

### Challenge

Arun and Marcus carry out the experiment described in *Comparing the solubility of two salts: part 1*. They find that more of salt X than salt Y can be dissolved in water at room temperature.

The boys then investigate the solubility of these two salts at different temperatures. The graph shows the results of their investigation.



5 At what temperature do the two salts have the same solubility?

.....

6 Which salt is less soluble at 50 °C? .....

7 Describe what the graph shows about the solubility of salt X.

.....  
.....  
.....

CHOOOL

## > 2.4 Paper chromatography

### Exercise 2.4B Paper chromatography

#### Practice

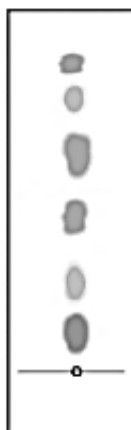
This exercise will give you practice in interpreting a chromatogram.

A food scientist is testing the food colouring used in drinks sold for children. She has to check that any colouring used does not contain any banned chemical.

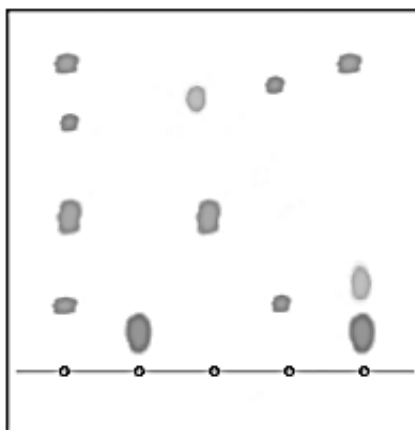
She places drops of the drink on chromatography paper. She uses water to allow the colouring to separate.

She also makes another chromatogram of all the permitted chemical colourings. If she finds anything that does not match with these colourings, she will have to carry out further tests.

The diagrams show her two chromatograms.



chromatogram from the drink



chromatogram of the permitted chemicals

- 1 Why is the spot of drink placed above the water line at the start of the process?

.....

.....

- 2 How many different colourings has the scientist found in the drink?

.....

- 3 Draw a circle around the dye in the drink that is **not** on the permitted list of colourings.

HOOOL



- 4 Explain why the scientist should carry out further tests on this colouring found in the drink.

.....

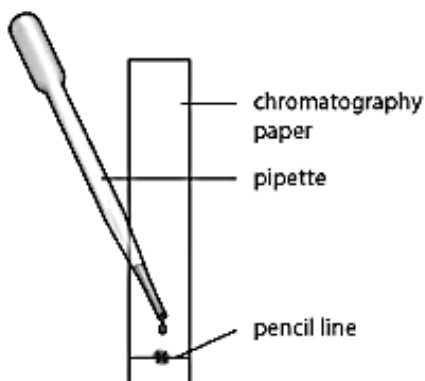
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## Exercise 2.4C Paper chromatography with plant material

### Challenge

This exercise will give you practice in interpreting a chromatogram.

Sofia has been given some liquid that has been extracted from the petals of a flower. She wants to find out if it is a pure substance or if it is a mixture. She places drops of the liquid on a piece of chromatography paper. The diagram shows what she did.



She was careful to allow each drop of liquid to dry before adding another drop. She placed the paper into a beaker containing water and waited to see the result.

After about 15 minutes she saw that the water had moved up the paper but the drop of liquid had not.

- 1 Explain why this happened.

.....

.....

2 What should Sofia try now?

.....

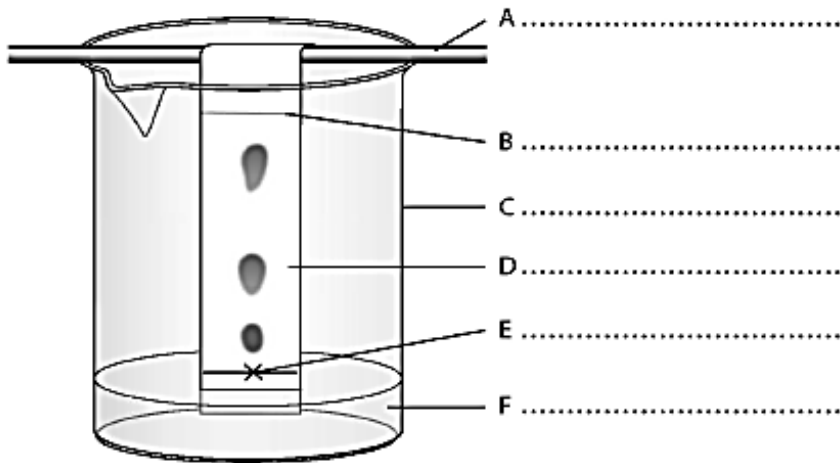
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.....

After Sofia changed her investigation, she produced this chromatogram.

3 Label the chromatogram.



4 Why did Sofia dry the drops of liquid before she added more?

.....

.....

.....

5 Is the colour from the petals pure or a mixture? How do you know this?

.....

.....

.....

HOOOL