

Chapter 4: States of Matter

Worksheet 1: The rate of evaporation

Date: / /

Objective/s:

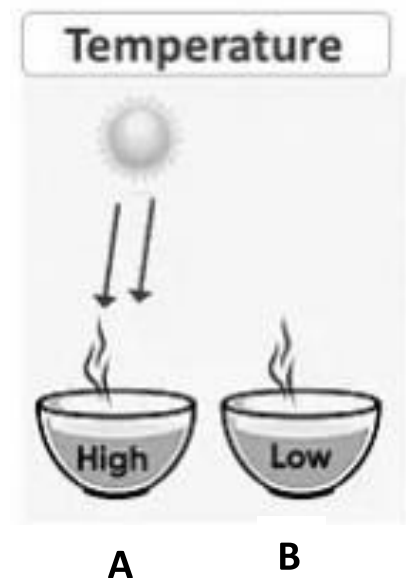
- Investigate the effect of temperature on evaporation process.

You will need:

Two identical glasses, water, a permanent marker, a measuring cup or cylinder.

- Investigation 1:

- Measure and pour 100 ml of water into both glasses.
- Mark the level of the water in the glasses with a permanent marker.
- Put one glass in a warm place. Put the other glass in a cool place. Leave the glasses for two days, without covering them.



- Predict the results you expect to obtain. Which glass will have less water in it after two days?

..... **Class A**.....

- Mark the level of water in both glasses after two days.

Questions:

1. Was the water level in the two glasses the same after two days?

..... **No**.....

2. Which glass had the least amount of water after two days? Was your prediction correct?

..... **Glass A**.....

3. How can you calculate the amount of water that evaporated from both glasses.

By subtracting the final amount from the initial amount that we put at the beginning of the investigation.

4. What can you **conclude** about the relation between the temperature and how fast evaporation takes place.

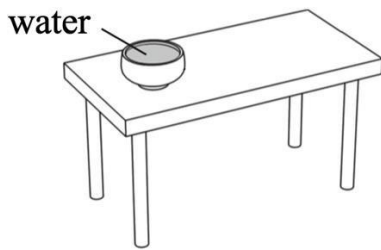
The higher the temperature is, the faster evaporation takes place.

5. Relate: Can you explain why does wet clothes dry quicker on a hot day?

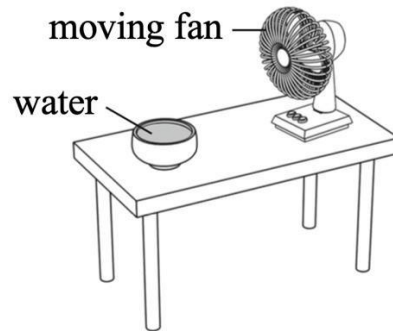
Water evaporates more quickly as the temperature gets higher.

Investigation 2:

Jamila carries out an investigation of the rate of evaporation. She prepares two set-ups as shown. The two bowls have the same amount of water. Jamila leaves both set-ups in a room. She measures the amount of water left in the bowls after two hours.



set-up A



set-up B

1. What is Jamila investigating?

The rate (speed) of evaporation.

2. Which bowl will have more water after two hours?

Bowl in set-up A.

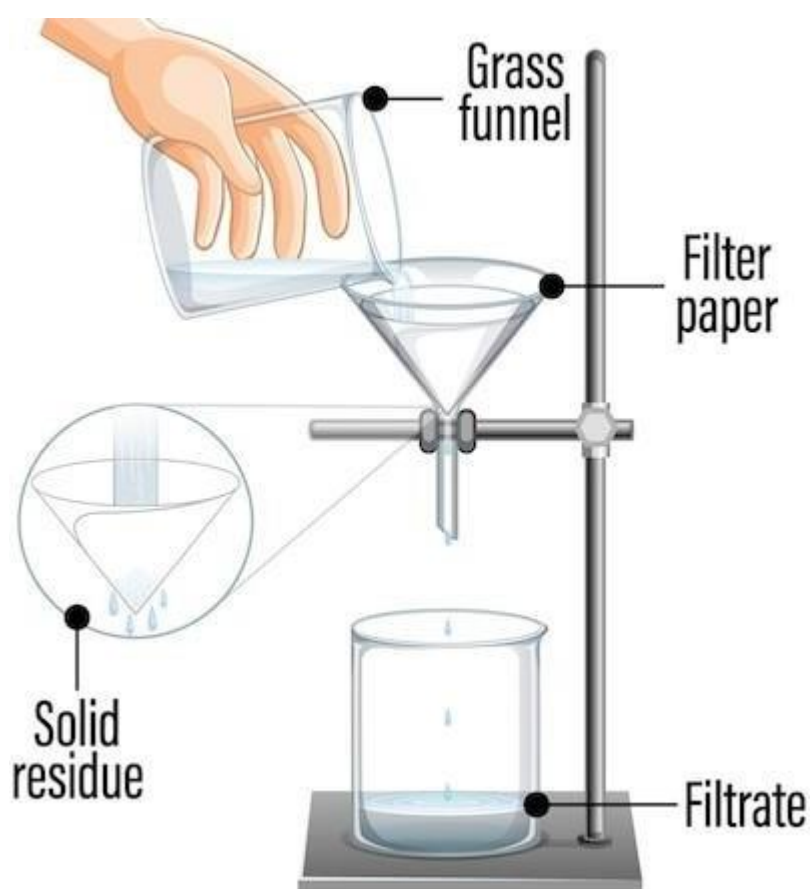
3. Name two factors Jamila must keep the same in order to have a fair test?

Same size of bowl, Same amount of water, Same temperature of water and the surrounding.

➤ We can conclude that the factors that affect rate (speed) of evaporation are:

- 1) **Wind speed**
- 2) **Temperature**
- 3) **Surface area**.....

Chapter 5: Interactions of matter



Chapter 5: Interactions of Matter

Worksheet 1: The rate of evaporation

Date: / /

Worksheet 1: Investigating the melting point and boiling point of water

- **Objective/s:**

Investigating the melting point and boiling point of pure water in the lab.

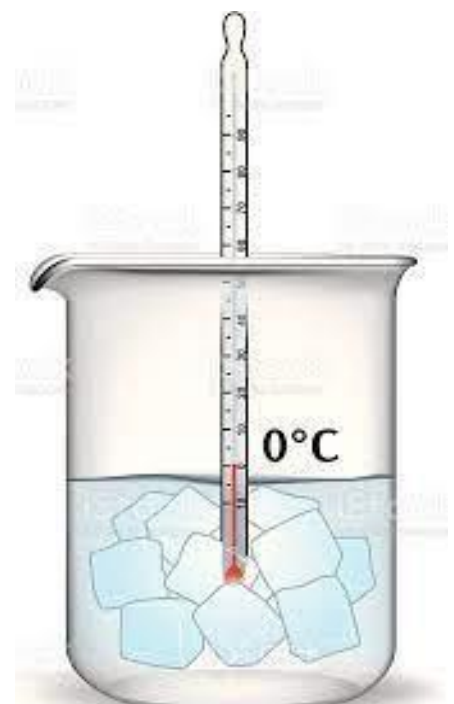
Lab report

Materials you will need:

A thermometer, beaker, ice cubes (crushed ice), a spoon, bunsen burner, stop watch.

Part 1: Investigating the melting point

1. Place the thermometer in the cup of water. Wait for about two minutes.
2. Measure and record the water temperature.
3. Take the thermometer out of the water. Add the crushed ice and stir with the spoon.
4. Repeat the first two steps.
5. Measure and record the water temperature every two minutes until all the ice has melted.

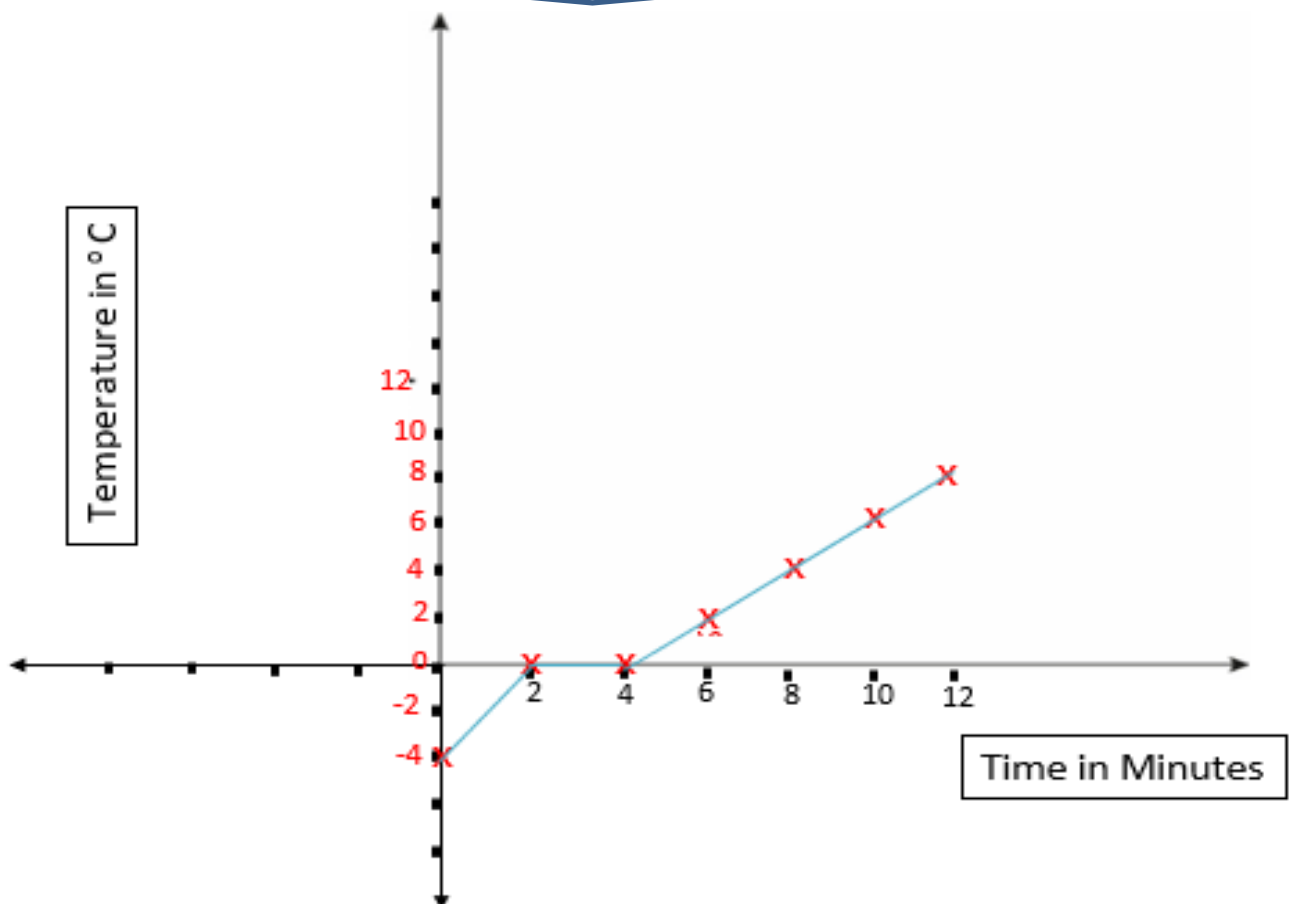


Observation:

Time in minutes	Water temperature in °C
0	-4
2	0
4	0
6	2
8	4
10	6
12	8

6. Draw a **line graph** of your results.

- We draw a line graph when we measure how something changes over time.
- Plot the variable that we measure (e.g. temperature) on the y-axis and time on the x-axis.



- Questions:

1. What did you notice about the temperature of ice water up to the time when all the ice had melted?

... **It stayed the same**

2. What was the temperature of water when all the ice had melted?

..... **0°C**.....

3. What do we call this temperature at which a substance melt?

... **Melting point**

4. How many minutes did it take for all the ice to melt?

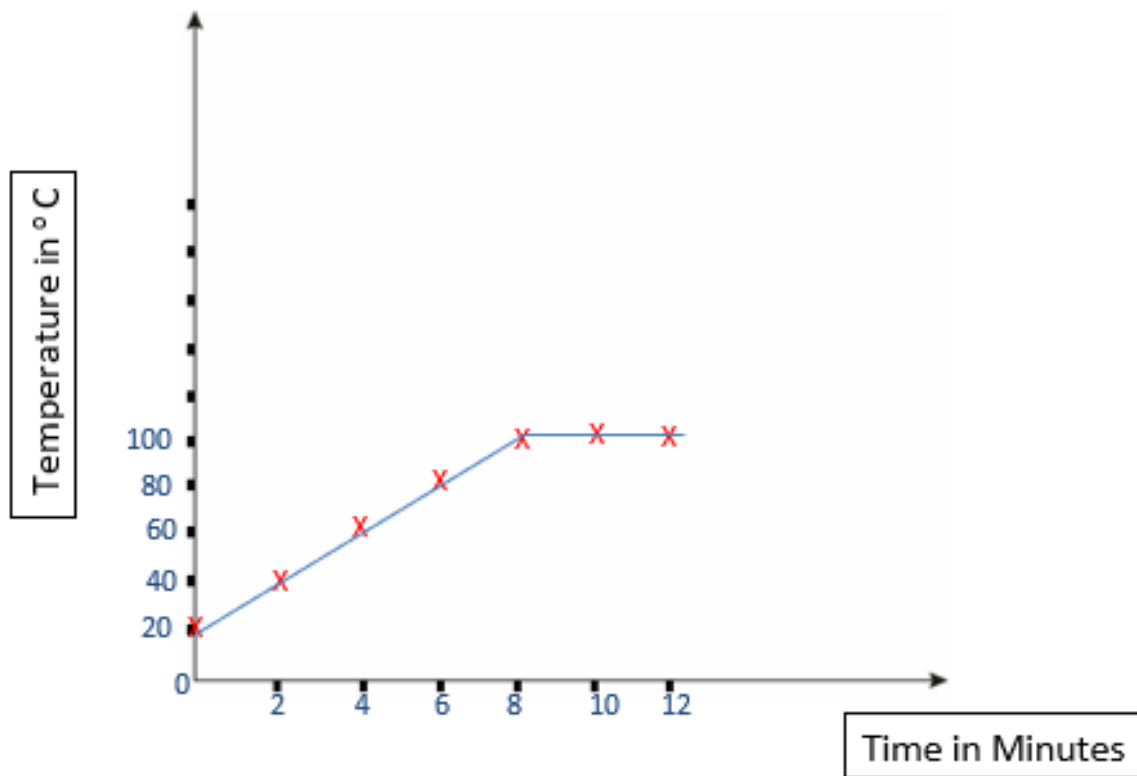
..... **4-2=2 minutes**.....

Part 2: Investigating the boiling point

Next, the students used a thermometer to measure the change in temperature of water as it heats up. These are their results.

Time in minutes	Water temperature in °C
0	20
2	40
4	60
6	80
8	100
10	100
12	100

1. Draw a line graph of the results.



2. At which temperature did water start to boil?

... 100°C.....

3. How did you know that water started to boil?

.....Bubbles were formed.....

4. What happened to the temperature of water while boiling?

... It stayed the same.....

5. What do we call the temperature at which a liquid starts to boil?

... Boiling point.....

Chapter 5: Interactions of Matter

Worksheet 2: Dissolving

Date: / /

Objective/s:

- Classify substances into soluble and insoluble.
- Identify the parts of a solution.

Soluble and Insoluble Substances

Required materials:

- | | | | | |
|----------------|--------|----------------|---------|-------------------|
| - Water | - Salt | - Sand | - Flour | - Jelly powder |
| - Four beakers | | - Stirring rod | | - Spatula (spoon) |

Procedure:

1. Pour 100 ml of water into each beaker.
2. Add one spatula of solid into each beaker and stir.
3. Observe what happen, record your observations in the table below.

Observation:

Mixture	Observation	Soluble/ Insoluble
Mixture 1: Sand and water	The sand does not dissolve in water. -The sand settled at the bottom of the beaker. - It formed a cloudy mixture.	Insoluble
Mixture 2: Jelly powder and water	- The jelly powder dissolved in the water forming a clear colored solution. - No solid settled at the bottom.	Soluble
Mixture 3: Salt and water	- It dissolved in water. - It formed a clear solution.	Soluble
Mixture 4: Flour and water	-Some of the particles settled down at the bottom of the beaker, and some formed a cloudy mixture.	Insoluble

In the mixture of **salt and water**, what is the name given to:

- Mixture: ... **Salt solution**.....

- Salt: **Solute**

- Water: ... **Solvent**

Question 3:

when a substance is mixed with water it may dissolve.

Complete the sentences about adding substances to water using the words below, you can use each word once:

soluble	evaporates	solution	solute
insoluble	solubility	solvent	dissolves

- a) The mixture of a substance dissolved in water is called a ... **solution**.....
- b) A substance is dissolved in water. This substance is called
... **solute**
- c) A substance that can dissolve in water is **soluble**.....
- d) The liquid at which a solid dissolve is called a ... **solvent**.....
- e) When all water **evaporates**.... from the salt solution, salt is left
behind.
- f) Sand does not make a solution when mixed with water because it is
.. **insoluble**... .

Question 5:

Classify the following substances into soluble and insoluble in water.

Clay Flour Sand Sugar Chalk Salt

Soluble	Insoluble
sugar	Clay
salt	Flour
	sand
	Chalk

Question 6:

Sugar dissolves in water to form a colourless solution.

(a) What is the name of the **solvent** in this colourless solution?

Water

.....

(b) The solution is left in a warm room for 10 days.

After 10 days all the water has disappeared.

What has happened to the water?

It evaporated

.....

(c) After 10 days a solid is left behind.

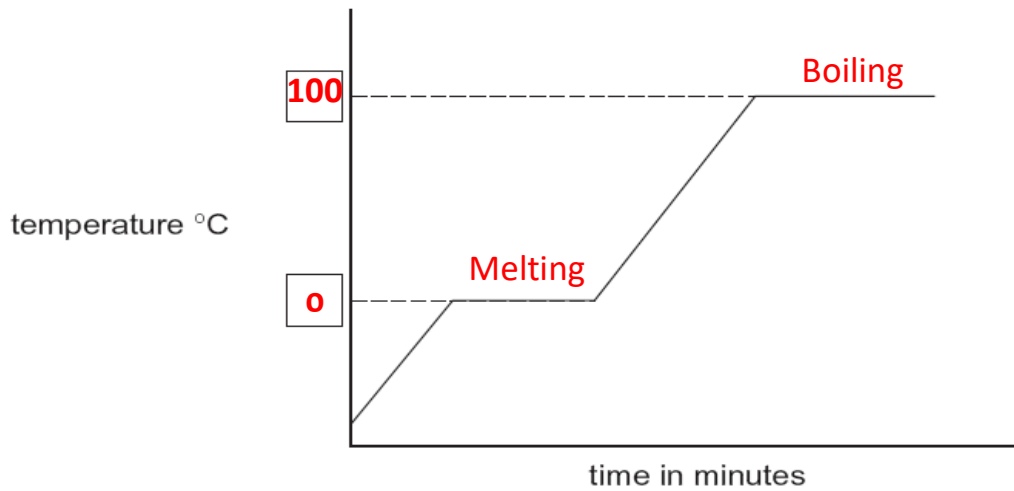
What is the name of the **solid** left behind?

Sugar

.....

Question 8:

The graph shows the temperature of pure water as it is heated from a solid to its boiling point.



(a) Fill in boxes on the diagram with the temperature of the melting point and boiling point of water.

(b) The water was heated in a beaker. As the water boils the amount of the water decreases. Why?

Because it evaporates.

(c) What happens to the temperature when the water is boiling?
Tick (✓) the correct box.

- stays the same
- increases
- decreases