UNIT 1 THE THREE STATES OF WATER

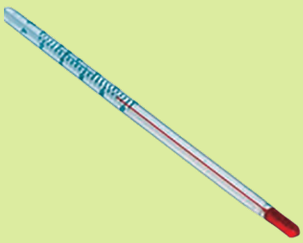
THERMOMETER

- A thermometer is used to measure temperature.
- It tells us how hot or cold something is.
- Temperature is measured in **degrees Celsius** (° C).
- The three types of thermometers are:

1. Mercury thermometer **2. Alcohol thermometer** **3. Digital thermometers**

1. Mercury thermometer

- A mercury thermometer contains a shiny liquid called mercury.
- When it is hot, the liquid (mercury) rises up and when it is cold, the liquid (mercury) falls down.



2. Alcohol thermometer

- An alcohol thermometer contains a reddish liquid known as alcohol.
- On a hot summer day, the alcohol inside the thermometer will rise up. On the other hand the alcohol will fall down on a cold winter day.

3. Digital thermometers

Digital thermometer also known as clinical / electronic thermometer is mainly used to measure body temperature.

The normal body temperature is **37°C**.

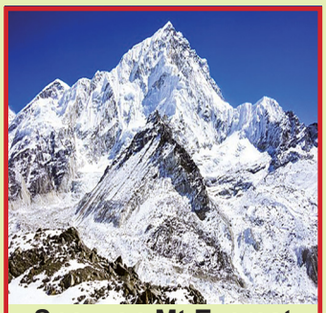
STATES OF WATER

The three states of water are:

1. Solid State 2. Liquid State 3. Gas State

SOLID STATE

- Ice/snow is water in the solid state.
- The temperature of ice is below 0°C.
- Ice is hard, cold and slippery.
- Ice is used:
  1. to chill drinks
  2. to relieve pain
  3. to practice sports like skiing and skating



Snow on Mt Everest

There is snow (ice) on top of very high mountains like Mt Everest and Mt Kilimanjaro.

This is because on top of very high mountains the temperature is very low.
As a results water freezes to become ice (snow).

UNIT 1 STATES OF WATER

LIQUID STATE

- Tap/pure water is in the **liquid state**.
- Tap/pure water is odourless, colourless and tasteless.
- Water from reservoirs, lakes and rivers need to be filtrated and purified/boiled since it contains germs.
- Water is used:
  1. for drinking
  2. for washing our hands/bathing
  3. for cooking
  4. for brushing our teeth
  5. for irrigation
  6. in factories/industries

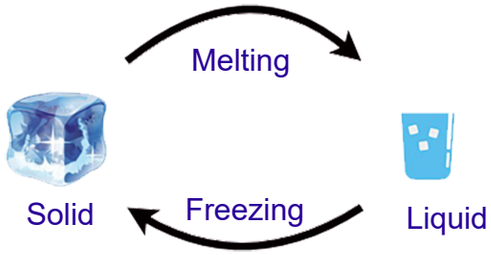
GAS STATE

- Water vapour and steam are in the **gas state**.
- When water evaporates, it turns into water vapour.
- Steam is obtained when water reaches its boiling point.
- Both water vapour and steam are invisible.

Water vapour

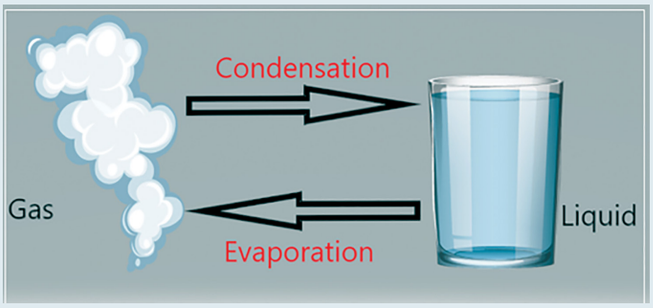
Steam

CHANGING ICE INTO WATER / CHANGING WATER INTO ICE



- The process of turning ice (solid state) into water (liquid state) is known as melting.
- Ice melts when exposed to heat.
- Ice melts to become water at a temperature of 0°C.

- When we put water in a freezer, it will become ice.
- The process of converting water (liquid state) into ice (solid state) is known as freezing.
- The freezing point of water is 0°C.



- When water is heated, water vapour is formed and rises in the air.
- As a result, water (liquid state) is converted into water vapour (gas state).
- This process is known as ***evaporation***.
- At 100°C water boils, evaporates rapidly and steam is formed.

- In Mauritius, at Tamarin there are salt pans.
- In the salt pans there is sea water.
- When the sea water is heated by the sun, it evaporates and salt is obtained.

Salt pans at Tamarin

- When water vapour rises in the air and gets into contact with a cold surface, it cools down to form water droplets.
- In other words, water vapour (gas state) is converted into water (liquid state).
- This process is known as condensation.

Clouds

When water vapour rises high in the atmosphere and condenses, clouds are formed.

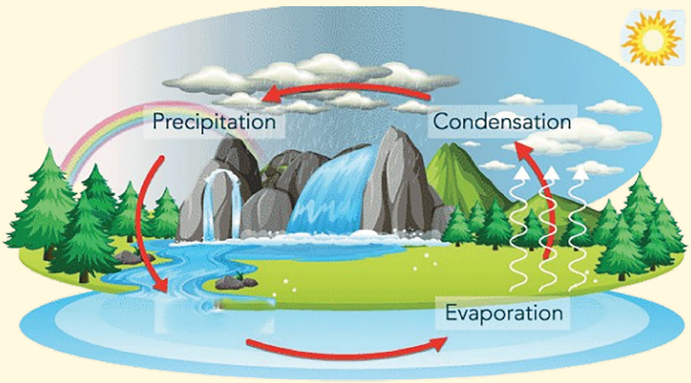
Dew

Condensation of water vapour that occurs on the earth's surface, often visible on leaves, grass and metal surfaces is known as dew (la rosée).

Fog

Fog is a thick cloud that appears when water vapour condenses very close or at the earth's surface.

UNIT 1 THE WATER CYCLE



- The water cycle is an important process whereby almost all water from the Earth's surface is transferred to the atmosphere and back in a continuous way.
- Water cycle helps to provide fresh water to all living things in the form of rain.
- The three stages of water cycle are:

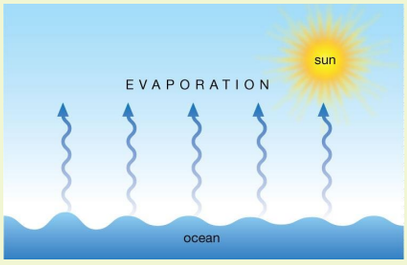
1. EVAPORATION **2. CONDENSATION** **3. PRECIPITATION**

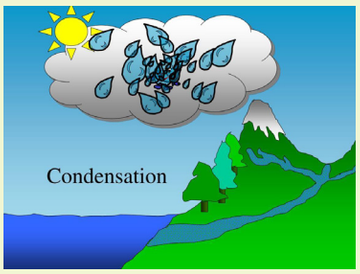
1. EVAPORATION

Evaporation occurs when the sun heats up the water in oceans, lakes, rivers and plants to form water vapour.

When water evaporates, it changes from the liquid state into gas state, that is, water vapour.

The water vapour then rises up into the atmosphere.





2. CONDENSATION

When vapour water rises into the atmosphere, it gets cooler and changes into tiny water droplets. These tiny water droplets join together to form clouds.

This process is known as condensation. Condensation is important since it is responsible for the formation of clouds.

3. PRECIPITATION

Once clouds have been formed, they become heavy and water falls back to Earth as rain. This process is known as precipitation.

The rain falls back in the oceans, lakes and rivers. The water also fills underground lakes and streams.

When the sun heats the water, the cycle starts all over again.

UNIT 1

Ex 1.0. Circle the letter which shows the correct answer.

1. Which type of thermometer uses a liquid metal to measure temperature?

A. Alcohol thermometer
B. Digital thermometer
C. Mercury thermometer
D. Electronic thermometer

2. Which of these is NOT a state of water?

A. Solid
B. Liquid
C. Gas
D. Temperature

3. What happens when ice melts?

A. It changes from a solid to a liquid.
B. It changes from a liquid to gas.
C. It changes from a gas to a liquid.
D. It changes from a solid to a gas.

4. How does water get back to the Earth from the clouds?

A. Condensation
B. Precipitation
C. Evaporation
D. Freezing

5. Which of these is NOT part of the water cycle?

A. Evaporation
B. Condensation
C. Freezing
D. Precipitation

6. Which of the following properties of ice allows it to be used to do sports such as skiing?

A. Ice is cold and hard.
B. Ice is slippery and cold.
C. Ice is hard and slippery.
D. Ice is solid and cold.

7. What happens during condensation?

A. Water vapour turns into liquid water.
B. Liquid water turns into ice.
C. Ice turns into liquid water.
D. Liquid water turns into water vapour.

8. What is the main source of energy that drives the water cycle?

A. Wind
B. Sun
C. Moon
D. Gravity

UNIT 1

Ex 1.1. Fill in the blanks with the given words.

increases - liquid - temperature - melt - heat - solid

Ice is water in the ..... state. In a freezer, its ..... is below 0°C. When ice is taken out of the freezer, it gets ..... from outside. The temperature ..... gradually. At 0°C, ice starts to ..... . It then becomes ..... water.

Ex 1.2. The picture below shows some ice cubes (solid state) that were taken out of a freezer.

1. Write down another example of water in the solid state. .....

2. Write down two uses of ice at home.

   (i) .....

   (ii) .....

3. List down two properties of ice.

   (i) .....

   (ii) .....

4. What will happen to an ice cube if we hold it in our hand?

   .....

5. The picture below shows Mt Kilimanjaro in Africa.

Mt Kilimanjaro

(a) Why is there snow on top of Mt Kilimanjaro?

.....

(b) There is no snow on top of mountains in Mauritius. Explain why.

.....

Ex 1.3. The picture shows the use of a thermometer to measure body temperature.

1. Name the type of thermometer used in the above picture.

.....

2. What is the normal body temperature?

.....

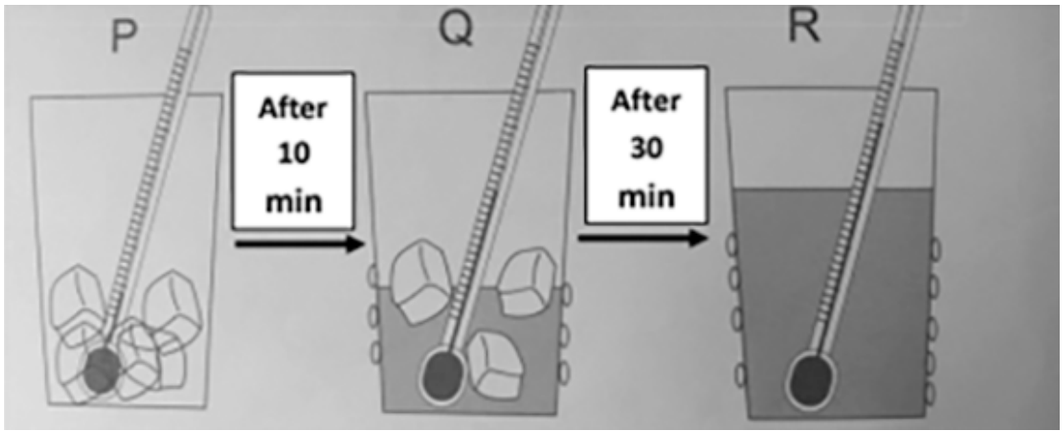
Ex 1.4. Using the given temperatures, fill in the table below.

0 °C - 100°C - Below 0 °C

Boiling point of water	.....
Solid ice	.....
Melting point of ice	.....
Freezing point of water	.....

Ex 1.5. Read the statement and observe the diagram below. Then answer the questions.

Sam took some ice cubes from a freezer and placed them in a glass. He immediately measured the temperature (at **P**), then after 10 minutes (at **Q**) and finally after 30 minutes (at **R**).



(a) The reddish liquid inside a thermometer is known as …… .

(b) Write down the temperature shown by the thermometer at **P**, **Q** and **R** using the given information.

4 °C - Less than 0 °C - 12 °C

P	.....
Q	.....
R	.....

(c) Name the process by which solid ice changes into liquid water.

.....

(d) Water droplets can be seen outside the glass after 10 minutes.

Sam deduced that the water droplets came from inside the glass.

(i) Do you agree with Sam? .....

(ii) Give a reason for your answer.

.....

Ex 1.6. The diagram below shows the salt pans at Tamarin.

(a) Fill in the blanks with words of your own.

At Tamarin in the salt pans, there is ..... water.

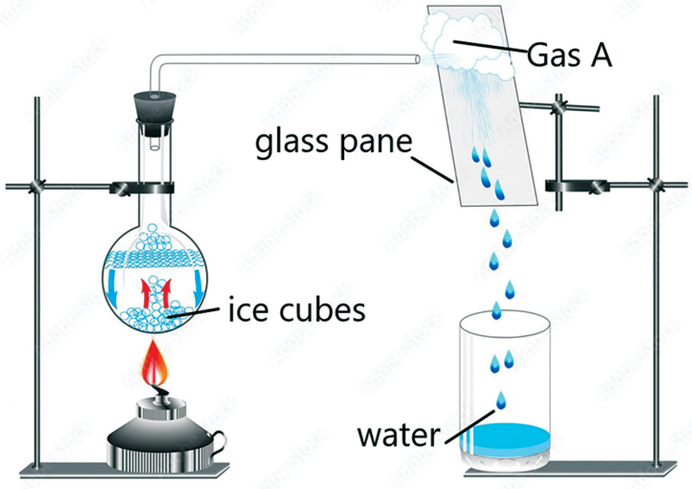
The water is ..... by the heat of .....

and ..... is obtained.

(b) Why are salt pans located at Tamarin?

.....

Ex 1.7. Study the experiment below and then answer the questions.



1. In which state are the ice cubes? .....

2. Name invisible gas A. .....

3. When ice cubes are heated, they melt to become ..... .

4. Which process allows gas A to become water? ..... .

5. Explain the process you have mentioned in part 4.

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