

Chapter-4

Solids, liquid and gases

New words -

1. fluids	5. sedimentation
2. solidification	6. decantation
3. condensation	7. solute
4. filtration	8. solvent

Define the following –

- 1) Melting- The process by which a solid change into liquid.
- 2) Condensation - The process by which a gas changes into liquid on cooling.
- 3) Evaporation - The process by which a liquid changes into vapour on heating.
- 4) Solidification - The process by which a liquid changes into solid on cooling.
- 5) Sediments - The heavy insoluble solids that settle down at the bottom of the liquid is called sediment.

III) Answer the following questions.

Q1) What is matter name the three States of matter

Ans. Any substance that has mass and occupies space is called matter.

The three states of matters are solids liquids and gases.

Q2) Differentiate between solids, liquids and gases in terms of their particles.

Ans.

Solids	Liquids	Gases
Particles are very closely packed to each other	Particles are not very closely packed to each other.	Particles are very loosely packed to each other.

Q3) Define the following.

(Done after new words)

Q4) With the help of an example describe solute, solvent and solution.

Ans. 1) Solute- The substance that can dissolve in a solvent is called solute.

1) Solvent - The substance in which solute can dissolve is called solvent.

2) Solution - The mixture of salute and solvent is called solution.

Example- If we add salt to water, the water turn salty. Here the salt is solute, water is solvent and salty water is a solution.

Q5) Differentiate between soluble and insoluble substances.

Ans.

Soluble substances	Insoluble substances
Substances that dissolve completely into a solvent to form a solution is called soluble substances.	Substances that do not dissolve completely into a solvent is called insoluble substances.
Example – salt and sugar	Example – sand and chalk

Q6) How does filtration help to remove insoluble substances?

Ans. In filtration, a solution containing insoluble substances is passed through a filter paper.

On doing so, the liquid passes through the filter paper, while the insoluble substance gets retained on the filter paper.

Let's Apply (pg no. 56)

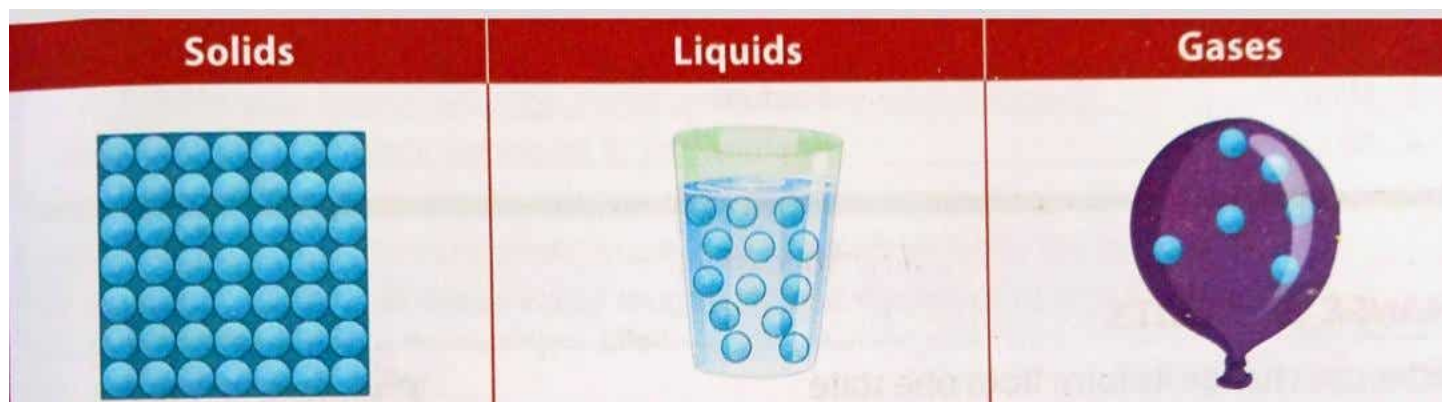
Q1) Maya added suji / rava (semolina) instead of salt to class of water how would she be able to remove it from the water.

Ans. Semolina can be removed by filtration as it is insoluble in water.

Q2) Poonam is wondering about snowfall on high mountains. Why do you think it snows on mountains?

Ans. Rain condenses into snow because it is very cold in high mountains.

DIAGRAM- Particles arrangement in all three states of matters.





Exercises



LET'S UNDERSTAND



Objective type questions

A. Fill in the blanks with the correct words.

1. A substance that has mass and occupies space is called matter (solid/matter).
2. All substances are made up of particles (liquids/particles).
3. Fluids include liquids and gases (liquids/liquids and gases).
4. Matter can (can/cannot) change its form from one state to another.
5. A solution (solvent/solution) is formed when two or more substances are mixed with each other.

B. Choose the correct option.

1. Which of these is true about solids?
 - a. Particles are packed very close to each other.
 - b. They are usually hard.
 - c. They have a fixed shape.
 - ☒ d. All of these
2. Which of these can flow from one place to another?
 - a. Milk and water
 - b. Oxygen and juice
 - c. Air
 - ☒ d. All of these
3. Which of these falls in the group 'fluids'?
 - a. Solids
 - b. Liquids
 - ☒ c. Liquids and gases
 - d. Gases
4. Which of these processes changes water to ice?
 - a. Boiling
 - b. Evaporation
 - c. Condensation
 - ☒ d. Solidification
5. Which of these is the solute in a sugar solution?
 - ☒ a. Sugar
 - b. Milk
 - c. Water
 - d. None of these
6. Which of these processes are best suited to remove insoluble substances from water?
 - a. Distillation and evaporation
 - b. Sedimentation and decantation
 - ☒ c. Sedimentation, decantation, and filtration
 - d. All of these

7. Which of these would you use to separate salt from water?

- a. Sedimentation
- c. Filtration

- b. Decantation
- d. Evaporation

8. Which process takes place when you take out an ice cube from the freezer and leave it at normal room temperature?

- a. Freezing
- c. Condensation

- b. Melting
- d. Evaporation

II. Very short answer type questions

A. Give two examples for the following.

1. Substances in which particles are very closely packed
2. Substances in which particles are very loosely packed
3. Fluids
4. Substances soluble in water
5. Substances insoluble in water

<u>table</u>	<u>pencil</u>
<u>Oxygen</u>	<u>Nitrogen</u>
<u>milk</u>	<u>carbon dioxide</u>
<u>sugar</u>	<u>salt</u>
<u>sand</u>	<u>chalk powder</u>

B. Name what you would get in the following.

1. When you take out an ice cube from a freezer and leave it in a normal room
2. When you heat a liquid for sometime
3. If you fill water in an ice tray and keep it in the freezer
4. When sugar is added to water
5. When salt is added to water

<u>water</u>
<u>steam/vapour</u>
<u>ice-cubes</u>
<u>sugar solution</u>
<u>salty water</u>

II. Answer the following questions.

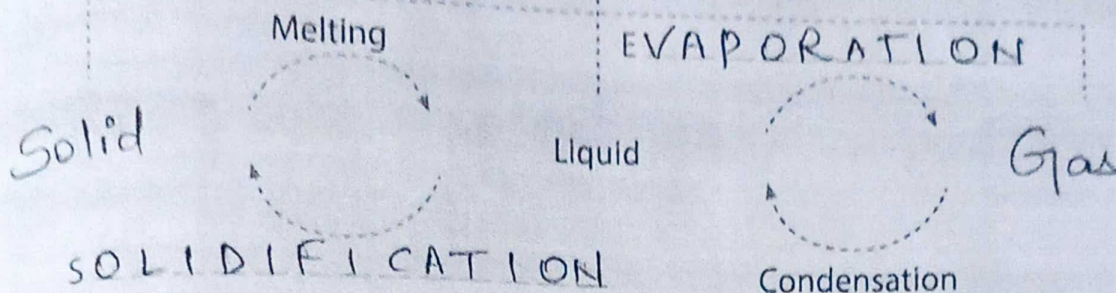
1. What is matter? Name the three states of matter.
2. Differentiate between solids, liquids, and gases in terms of their particles.
3. Define the following:
 - a. Melting
 - b. Condensation
 - c. Evaporation
 - d. Solidification
4. With the help of an example, describe solute, solvent, and solution.
5. Differentiate between soluble and insoluble substances.
6. How does filtration help to remove insoluble substances?

LET'S RECALL

Recall and complete the concept maps given below.



States of matter and change of states



Soluble substances

Examples:

1. Salt
2. Sugar

Types of substances and separation of substances

Insoluble substances

Examples:

1. Sand
2. Chalk

Separated by

EVAPORATION

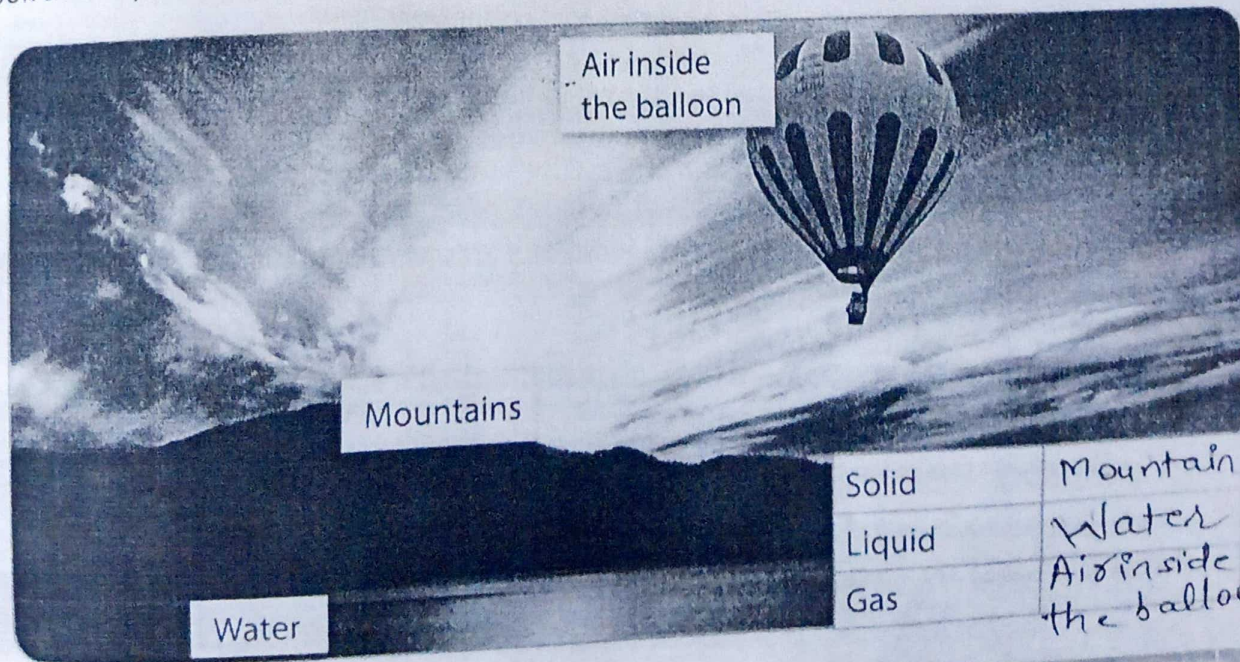
Separated by

FILTRATION
SEDIMENTATION
DECANTATION

LET'S OBSERVE



1. Look at the picture and sort out the labelled things into solid, liquid, and gas.



Solid

Liquid

Gas

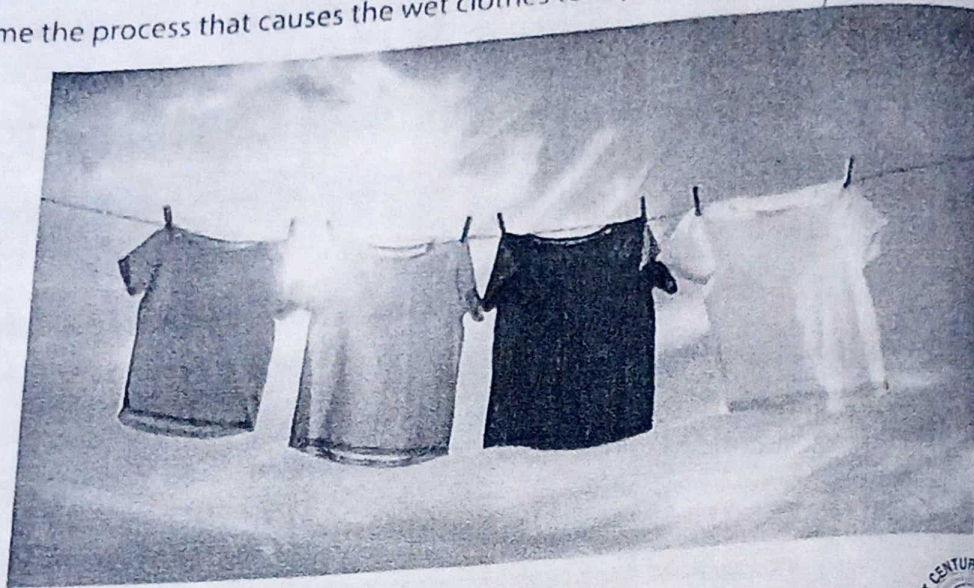
Mountains

Water

Air inside the balloons

2. Name the process that causes the wet clothes to dry up.

Evaporation



LET'S CONNECT



MATHS

Area and Volume

1. Count the total number of squares that the book covers. This is the area of the book. 16 squares = 16
- We also get the area by multiplying length and breadth of an object

Area = Length x breadth

Find out the area of a tile that is 10 cm long and 20 cm wide.

$$10 \times 20 = 200 \text{ square cm}$$

2. The amount of water filled inside the glass is the volume of the water that the glass holds.

Volume of a cuboid = Length x breadth x height

Calculate the volume of a tank that is 5 metres high, 2 metres wide, and 2 metres long. $5 \times 2 \times 2 = 20$ cubic metres

LET'S APPLY



(Note Book)

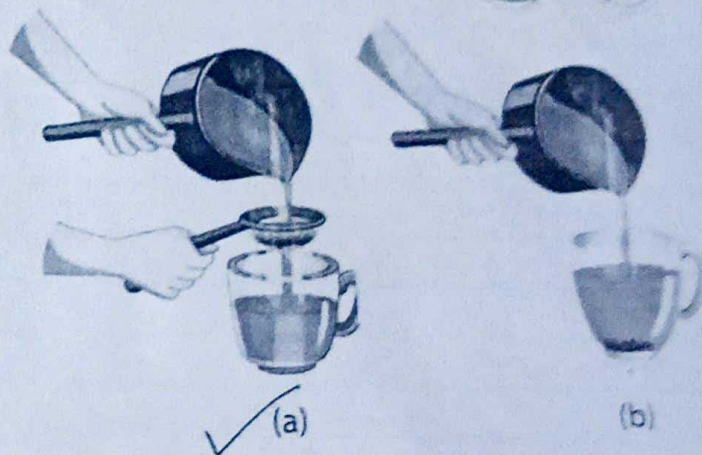
1. Maya added sooji/rawa [semolina] instead of salt to a glass of water. How would she be able to remove it from the water? **LO 16**
- (Hint: Sooji/Rawa (semolina) is insoluble in water.)
2. Poonam is wondering about snowfall on high mountains. Why do think it snows on mountains?
- (Hint: It is very cold in the high mountains.)



LET'S ANALYSE AND EVALUATE

- Which of the two (a) or (b) will be a better option to get a clear liquid? 
- Judge whether tea leaves are soluble or insoluble in water. Give one reason to justify your answer. 

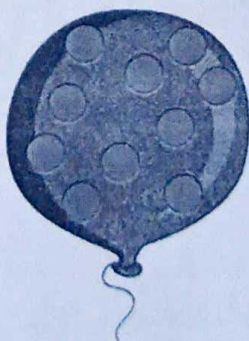
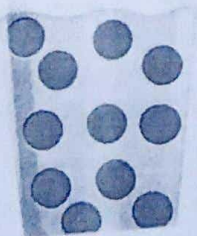
Ans - (a)
Ans - insoluble



LET'S CREATE



- Make a list of any 15 things that we come across in our daily life. Classify them into solids, liquids, and gases. On a chart paper use *bindis* to show how particles are arranged in each of one of them. Discuss your observations in classroom. **LO 2** **LO 15**



- With the help of an elder, open the masala box in the kitchen. Make a list of all the things you find there. Then guess which of them will be soluble, and which will be insoluble in water. Try dissolving each of them in water and check whether your guess was right or wrong. Discuss your observations in class. **LO 6** **LO 7**

Masala name

Guess whether soluble/insoluble in water

Actually soluble/insoluble