

Chapter 1

Matter

LESSON PLAN

SPECIFIC OBJECTIVES

Students will learn about

- ❖ introduction to matter and its constituents
- ❖ kinetic (molecular) theory of matter
- ❖ molecular arrangement in matter – three states of matter
- ❖ energy of molecules in three states of matter
- ❖ change of state
- ❖ explanation of change of state using kinetic theory
- ❖ evaporation and factors affecting the rate of evaporation
- ❖ applications and illustrations of evaporation
- ❖ differences between boiling and evaporation

Teaching Aids

Pictures/charts related to different states of matter; pictures showing molecular arrangement in solids, liquids and gases; pictures showing change of states of matter using kinetic theory; a chart showing factors affecting the rate of evaporation.

Teaching Strategy

- ❖ Students should be asked to study matter and its constituents, i.e., atom, molecule, etc.
- ❖ The teacher should teach the students about kinetic (molecular) theory of matter. He/She should also ask the students to perform activity 1 showing that molecules are in a state of motion given at page 8; activity 2 showing that force of cohesion between the molecules of a substance given at page 8.
- ❖ The teacher should teach the students about molecular arrangement in matter — three states of matter and related illustrations. He/She should also ask the students to learn question-answer related to kinetic energy of the molecules of a solid and liquid given at page 9.
- ❖ Students should be asked to perform activity 3 showing that liquids have intermolecular spaces. They should also be asked to perform activity 4 showing that gas molecules move freely given at page 10.

- ❖ Students should be asked to learn Table 1.1 showing the differentiation between solids, liquids and gases based on molecular concept.
- ❖ The teacher should ask the students to solve check point 1 given at page 11.
- ❖ Students should be encouraged to study energy of molecules in three states of matter, i.e., solids, liquids and gases. They should also be asked to study change of state and its related activity 5 showing change of states of ice and water given at page 12.
- ❖ Students should be encouraged to study melting or fusion and its related diagram.
- ❖ Students should be suggested to perform activity 6 showing to determine the melting point of paraffin wax given at page 13. They should also be asked to study freezing, freezing point, something more and question related to melting point given at pages 13–14. They should also be asked to learn Table 1.2 showing melting points of solids given at page 14.
- ❖ The teacher should ask the students to study vaporisation, condensation and related diagram. He/She should also ask the students to study question-answer and something more given at page 15. He/She should also ask the students to perform activity 7 showing determination of boiling point of water, and Table 1.3 showing boiling point of liquids given at page 15.
- ❖ Students should be encouraged to solve check point 2 given at page 16. They should be asked to study sublimation and deposition and related question-answer and diagram. They should also be asked to perform activity 8 showing to demonstrate the processes of sublimation and deposition; something more given at page 17.
- ❖ The teacher should ask the students to study explanation of change of state using kinetic theory and related diagram. He/She should ask the students to study melting, boiling and sublimation processes. He/She should also ask the students to learn something more related to average kinetic energy given at page 18. He/She should also ask the students to solve check point 3 given at page 18.
- ❖ Students should be asked to study evaporation and its related activity 9 given at page 19. They should also be asked to study the factors affecting the rate of evaporation; question-answer given at page 19. They should also be asked to study evaporation by kinetic theory of matter, evaporation causes cooling and related activity 10 given at page 20. They should also be asked to study applications and illustrations of evaporation and Table 4.1 showing differences between boiling and evaporation. They should also be asked to solve check point 4 given at page 21.
- ❖ The teacher should ask the students to recap the chapter with the help of wrapping it up and know these terms. He/She should also ask the students to answer the questions present in test yourself, and discuss the think zone present in it.

Boost UP

- ❖ The teacher should call each student one-by-one of the classroom and ask to tell the definition of the matter and its constituents named atoms and molecules.
- ❖ Students should be asked to tell the answer of questions related to kinetic theory of matter. They should also be asked to identify solids, liquids and gases based on their properties.
- ❖ Students should be asked to tell which state of matter has the largest intermolecular space and the largest intermolecular forces of attraction.

- ❖ The teacher should ask the students to define the change of state of matter, i.e., melting, freezing, boiling, condensation, sublimation, deposition and also to define them using kinetic theory.
- ❖ Students should be asked to tell the answer of few questions related to evaporation and factors affecting the rate of evaporation, applications of evaporation.

Expected Learning Outcomes

Students will be able to know the

- ❖ matter and its constituents.
- ❖ kinetic (molecular) theory of matter.
- ❖ molecular arrangement in matter–three states of matter.
- ❖ energy of molecules in three states of matter.
- ❖ change of state.
- ❖ explanation of change of state using kinetic theory.
- ❖ evaporation.
- ❖ factors affecting the rate of evaporation.
- ❖ applications and illustrations of evaporation.
- ❖ differences between boiling and evaporation.

Evaluative Questions

The teacher should ask the following questions to evaluate the students.

1. What is meant by matter?
2. Which state of matter cannot flow?
3. Which state of matter has definite shape and definite volume?
4. Which state of matter has weak intermolecular forces?
5. Name the process of changing solid into liquid state.
6. Name the process of changing liquid into solid state.
7. Define condensation.
8. Is evaporation a slow and continuous process?