Chapter 2

Physical Quantities and Measurement

LESSON PLAN

SPECIFIC OBJECTIVES

Students will learn about

- density and its units
- determination of density of solids, i.e., regular and irregular
- determination of density of liquids
- use of density bottle for finding density of a liquid
- relative density and its units
- relation between relative density and density of a substance
- variation in density of an object due to temperature
- floating and sinking
- principle and applications of floatation

Teaching Aids

Pictures showing measuring cylinder, Eureka can and beam balance, etc., used to determine density of solids, i.e., regular and irregular; picture of density bottle used to find the density of a liquid; few important formulae related to density and relative density in order to solve the numerical problems; few pictures showing the process of floating and sinking.

Teaching Strategy

- Students should be asked to study density and its units. They should also be asked to study question-answer and Table 2.1 showing density of some common substances given at page 27.
- Students should be asked to practice numerical problems related to density. They should also be asked to study determination of density of solids, i.e., regular and irregular.
- The teacher should teach the students about density of irregular solid which is heavier than water using activities 1 and 2 given at pages 29–30.
- Students should be suggested to study density of irregular solids lighter than water using activity 3 and question-answer given at pages 30–31. They should also be asked to practice numerical problems related to it.

- The teacher should ask the students to solve check point 1 given at page 32.
- Students should be encouraged to study determination of density of liquids using activity 4 given at pages 32–33. They should also be asked to study the use of density bottle for finding density of a liquid using activity 5 given at page 33. They should be asked to practice numerical problems related to it.
- The teacher should ask the students to study relative density; Table 2.2 showing relative density of substances given at pages 35; units of relative density and relation between relative density and density of a substance.
- Students should be asked to study variation in density of an object due to temperature and related question-answer given at pages 35–36. They should also be asked to solve check point 2 given at page 36.
- The teacher should ask the students to study floating and sinking; related question-answer given at page 36 and related activity 6 given at page 37. He/She should also ask the students to study principle and applications of floatation; question-answer and something more given at page 38.
- Students should also be asked to solve check point 3 given at page 39, and to know the technique used to check the purity of milk using a lactometer.
- Students should also be encouraged to recap the chapter using wrapping it up and know these terms. They should also be asked to solve the questions of test yourself and discuss the think zone given in it.

Boost UP

- Students should be asked to define density and the tell the SI unit of it.
- The teacher should call each student one-by-one of the classroom to tell the densities of few substances in kg/m^3.
- Students should be questioned related to determine the density of regular and irregular solids, i.e., lighter or heavier than water using measuring cylinder and an Eureka can.
- The teacher should arise few questions to students related to determination of density of liquids and use of density bottle for finding density of a liquid. The teacher should ask the students to tell the definition of relative density and also its unit.
- The teacher should ask the students to tell the answer of few questions related to variation in density of an object due to temperature. He/She should also ask the students to catagorise the few objects written on the blackboard between floating and sinking.

Expected Learning Outcomes

Students will be able to know the

- density and its unit.
- determination of density of regular and irregular solids.
- determination of density of liquids.
- use of density bottle for finding density of a liquid.
- relative density and its units.
- relation between relative density and density of a substance.

- variation in density of an object due to temperature.
- floating and sinking.
- principle and applications of floatation.

Evaluative Questions

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

1. Define density.
2. What is the SI unit of density?
3. Name the instrument used to measure the mass of the given solid.
4. What is meant by relative density?
5. Why is relative density a unitless quantity?
6. Find the density of water at 4°C.
7. Which object floats on water, cork or stone?
8. Why do icebergs float on water?