Chapter 2

Physical Quantities and Measurement

LESSON PLAN

SPECIFIC OBJECTIVES

Students must learn about

- brief introduction of measurement
- physical quantities and their measurement
- common unit systems
- SI unit system
- writing SI units and their symbols correctly
- measurement of length
- measurement of mass
- measurement of time
- measurement of temperature
- measurement of area

Teaching Aids

Pictures/models of few measuring instruments used to measure physical quantities; chart showing multiples and submultiples of length; pictures of few balances, different types of clocks and different types of thermometers.

Teaching Strategy

- The teacher should ask the students to study measurement in brief. He/She should ask the students to study physical quantities and their measurement in detail, and also question-answer given at page 19.
- Students should be asked to study common unit systems and its related Table 2.1 given at page 20 and the SI unit system and its related Table 2.2 given at page 20. They should be asked to learn the question-answer given at page 20 in the screen related to fundamental and derived units.
- The teacher should ask the students to study multiples and submultiples of units and its related Table 2.3 given at page 21 and also few measurements related to multiples and submultiples of length, mass and time given at page 21.

- Students should be asked to learn question-answer and something more related to century and millennium or micron and nanometer or light year given at page 21. They should also be asked to practice the numerical examples related to multiples and submultiples of few units.
- The teacher should teach the students to know the way to write SI units and symbols correctly along with the matter given in the screen at page 23.
- Students should be asked to solve check point 1 given at page 23.
- Students should be asked to study measurement of length and its related units and measuring devices. They should be asked to learn the relation between ft, cm and inch given at page 24. They should also be asked to study the correct method of using a measuring scale and measuring tape and its related numerical examples.
- The teacher should teach the students about measurement of mass, types of balances, measurement of mass using a beam balance and electronic balance, standard weights and related question-answer and something more given at pages 26–28.
- The teacher should ask the students to solve check point 2 given at page 29.
- Students should be asked to study measurement of time using of different types of clocks, 24-hour clock time, something more and important matter showing conversion of day into seconds given in screen at pages 29–30.
- Students should be asked to study measurement of temperature using different thermometers, i.e., laboratory and clinical thermometers and related illustrations, question-answer, different scales on thermometers at pages 31-32. They should also be asked to learn Table 2.4 showing fixed points of different thermometric scales.
- Students should be asked to perform activity 1 showing to find the temperature of water given at page 32. They should also be asked to perform activity 2 related to measure the temperature of a person using a clinical thermometer.
- Students should be encouraged to study measurement of area, its SI unit, multiples or submultiples of area, area of regular shapes and the related numerical examples. They should be asked to perform activity 3 showing to measure the area of a book given at page 35.
- The teacher should ask the students to learn measurement of area using a graph paper with the help of activity 4 given at page 36.
- The teacher should ask the students to solve check point 3 given at page 36.
- Students should also be asked to study wrapping it up and know these terms to recap the whole chapter. They should also be asked to answer the questions given in test yourself, and also discuss the think zone given in test yourself.

Boost UP

- The teacher should call each student one-by-one and tell him/her to write the name of some commonly used physical quantities. He/She should also ask the students to name SI units of these quantities.
- Students should be asked to tell the formulae related to multiples and submultiples of units of length, mass and time.

- Student should also be asked to solve numericals related to multiples and submultiples of length and to name the measuring devices used for measuring different quantities.
- Students should be asked to answer the few questions related to measurement of length, its units and related measuring devices; measurement of mass, types of balances and related measuring devices and knowledge about standard weights; measurement of time, 24-hour clock time; measurement of temperature, laboratory and clinical thermometers; measurement of area and its SI units.

Expected Learning Outcomes

Students must be able to know the

- definition of measurement.
- physical quantities and their measurement.
- common unit systems; SI unit systems.
- multiples and submultiples of units.
- steps involved to write SI units and their symbols correctly.
- measurement of length, its units and measuring devices.
- measurement of mass; types of balances and standard weights.
- measurement of time; 24-hour clock time.
- measurement of temperature; thermometers used to measure temperatures.
- approximation.

Evaluative Questions

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

1. Define measurement.
2. Which measuring device is used by a tailor?
3. Write the SI unit of area.
4. If the surface area of an object is 3.6 m^2, then calculate its value in cm^2.
5. How does we use a pendulum clock?
6. Define thermometer.
7. What is the body temperature in Fahrenheit?
8. What is meant by physical quantity?