ODM EDUCATIONAL GROUP
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PHYSICAL QUANTITIES AND MEASUREMENT

CHAPTER NO.1

SUB: PHYSICS

PHYSICAL QUANTITIES AND MEASUREMENT

CLASS-1

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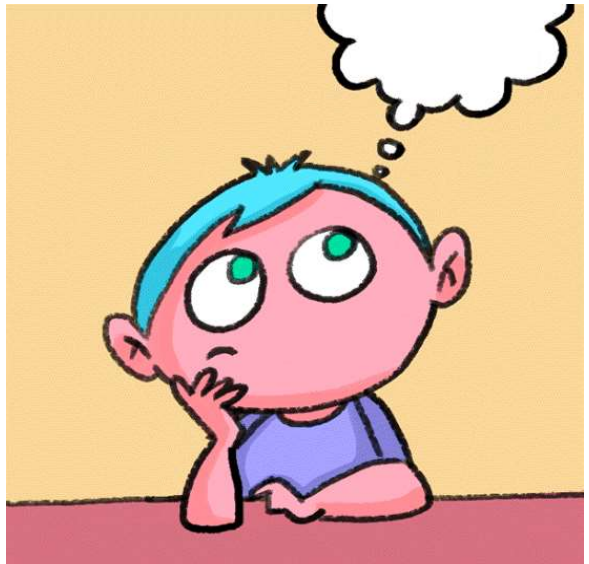
LEARNING OBJECTIVE

- Students will be able to define measurement.
- Students will learn what is unit.
- Students will learn about length, time, volume, temperature
- Students will learn to express volume of an object in a proper unit with proper symbols



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Physical Quantities:

- A physical quantity is a quantity that can be measured.
- Length, time, mass and temperature are the fundamental physical quantities.
- A physical quantity can be expressed as the combination of a numerical value and a unit. For example, the physical quantity mass can be quantified as n kg, where n is the numerical value and kg is the unit.

Measurement

Comparing an unknown quantity with some known quantity is called measurement.

Result of Measurement: The result of measurement has two parts; one part is the number and another part is the unit.

- The known quantity which is used in measurement is called a unit.

For example; when you say that your height is 150 cm then the measurement of your height is being expressed in a number, i.e. 150 and a unit, i.e. centimetre.

Length

- It is the distance between two points
- Its SI unit is metre (symbol m)
- It is measured with the help of a metre ruler or a measuring tape.

Mass

- It is the quantity of matter contained in the body.
- Its SI unit is kilogram (symbol kg)
- It is measured using a beam balance or an electronic balance

Temperature

- ❖ It is a quantity which measures the hotness and coldness of a body
- ❖ Its SI unit is Kelvin (symbol K)
- ❖ It is measured using a thermometer.

Time

- ❖ It is the interval of occurrence of an event.
- ❖ Its SI unit is second (symbol s)
- ❖ It is measured with the help of a pendulum clock or a watch

Measurement of Volume

Volume

- The space occupied by an object is called its volume.
- SI Unit of Volume
- The SI unit of volume is cubic meter(m^3)
- One cubic meter is the volume of a cube with each side 1m long

$1m^3$=1m*1m*1m

Relation between m^3 & cm^3

$1m^3$ = 1m × 1m × 1m

=100cm ×100cm ×100cm

=1000000 cm^3

The volume of liquids is generally expressed in liter (symbol L)

1000 cm^3 make one litre

i.e.,

1000 cm^3 = 1litre

Vessels for measuring the volume of liquids

To measure the volume of liquid such as water, milk, oil etc.,

We generally use the following two kinds of vessels:

- Measuring cylinders
- Measuring beakers

Measuring cylinders

- ✓ Measuring cylinder is a common piece of laboratory equipment used to measure the volume of a liquid.
- ✓ It has a narrow cylindrical shape.
- ✓ Each marked line on the graduated cylinder represents the amount of liquid that has been measured.

Measuring beakers

- A measuring beaker is used generally to measure fixed volume of a liquid such as milk, oil etc.
- They are available in different capacities such as 50 mL, 100 mL,500 mL,1000mL.

HOME ASSIGNMENT

1.Define the term volume of an object .

2.State and define the S.I. unit of volume .

3.State the two smaller units of volume .How are they related to the S.I. unit ?

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