ODM EDUCATIONAL GROUP
Changing your Tomorrow

PHYSICAL QUANTITIES AND MEASUREMENT

SUBJECT-PHYSICS

CHAPTER NO- 2

Measurement of length

PERIOD-3

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LEARNING OBJECTIVE

Students will be

- familiarized with the definition of length
- Sensitized about the basic units of length
- Able to Know how to use of simple multiples and sub-multiples of metre
- Able to understand relationship between ft, inch and cm
- Knowing the devices used for measuring length- a metre ruler and a measuring tape.

WARM UP ACTIVITY

Activity

Show a chart on which a table of physical quantities, their respective S.I. units is shown like as:-

Physical Quantities	SI	Symbol
Length	*meter*	*m*
Mass	*kilogram*	*Kg*
Time	*Second*	*S*
Electric current	*Ampere*	*A*
Temperature	*Kelvin*	*K*
Volume	*Liter*	*L*

Ask some questions to assess the students' previous knowledge and write the expected responses on the board

Q1. In which units do you measure your height?
(Expected response: In feet or meters)

Q2: In which units do us show time?
(Expected response: In minutes hours or seconds)

Q3. How much do you weight?
(Expected response: 35-40Kg)

Q4: How far away is your school?
(Expected response: meters or kilometers)

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Measurement of length

- The length and type of an object determine the kind of measuring tool that can be used.
- Large distances, e.g. distances between cities, are measured in kilometres.
- **Unit of Length**: The SI unit of length is the metre (m).

Multiples of Metre

- 1 decametre (dam) = 10 m
  1 hectometre (hm) = 100 m
  1 kilometre (km) = 1000 m

Sub- Multiples of Metre

1 m = 10 decimetre (dm)

1 m =100 centimetre (cm)

1 m = 1000 millimetre (mm)

1 m = 106 micron (µm)

1 m = 109 nanometre (nm)

Basic physical quantities

- A quantity that can be measured is called a physical quantity.
- In our daily life the measure the following four basic physical quantities

➢ length

➢ mass

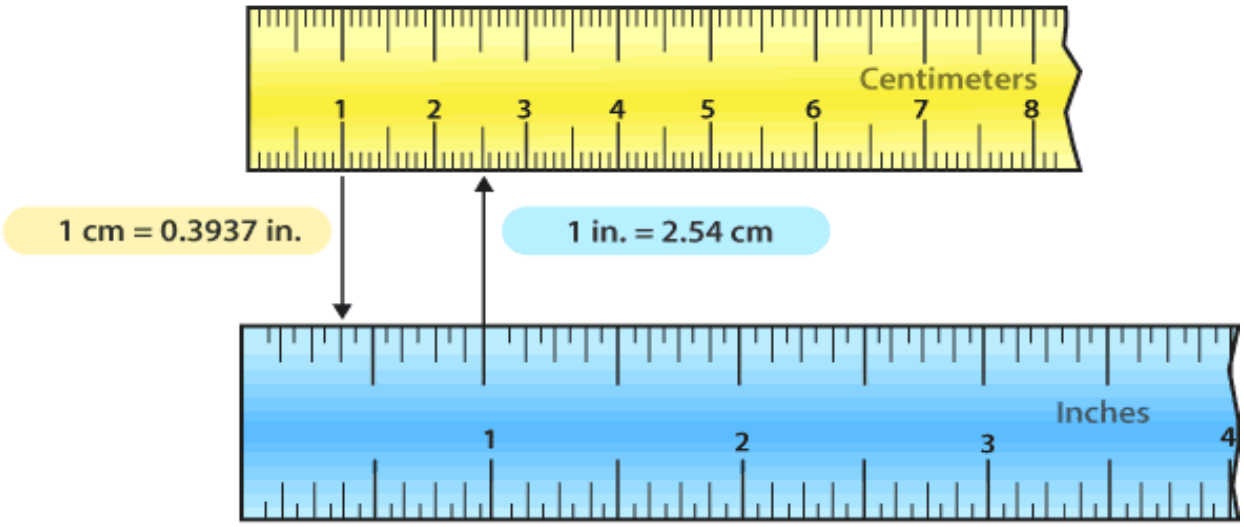
➢ time

➢ temperature

Converting from Standard to Metric

Convert from:	To:	Multiply by:
mile	kilometer (km)	1.609347
inch	millimeter (mm)	25.4
inch	centimeter (cm)	2.54
foot	meter (m)	0.3048
yard	meter (m)	0.9144

RELATION BETWEEN INCH AND CENTIMETERS



Devices for measuring length-

use of a meter ruler to measure length by the help of a video

- https://youtu.be/lHmjeL6w0yw

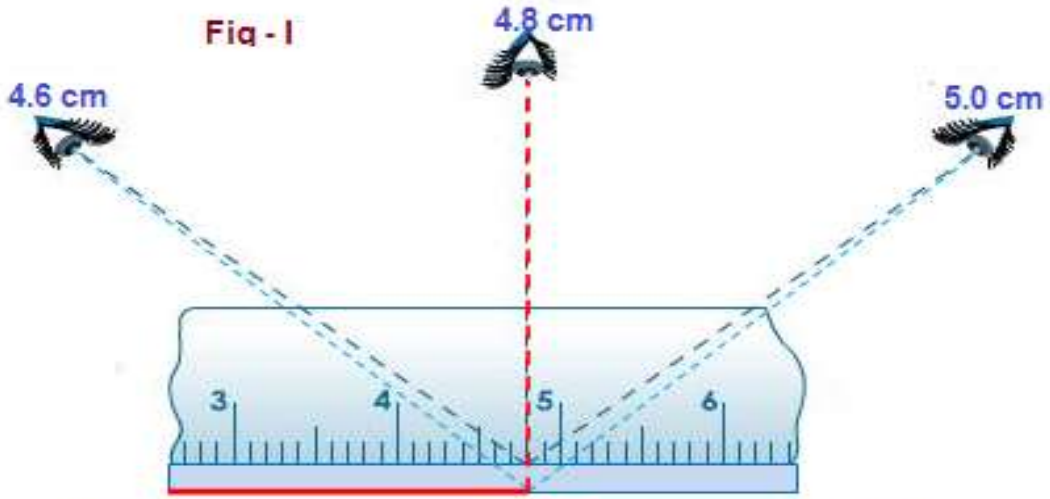
Devices for measuring length-

- Explain the use of measuring tape to measure length
- https://youtu.be/-0p2RD0VnR0

Avoiding Parallax Error

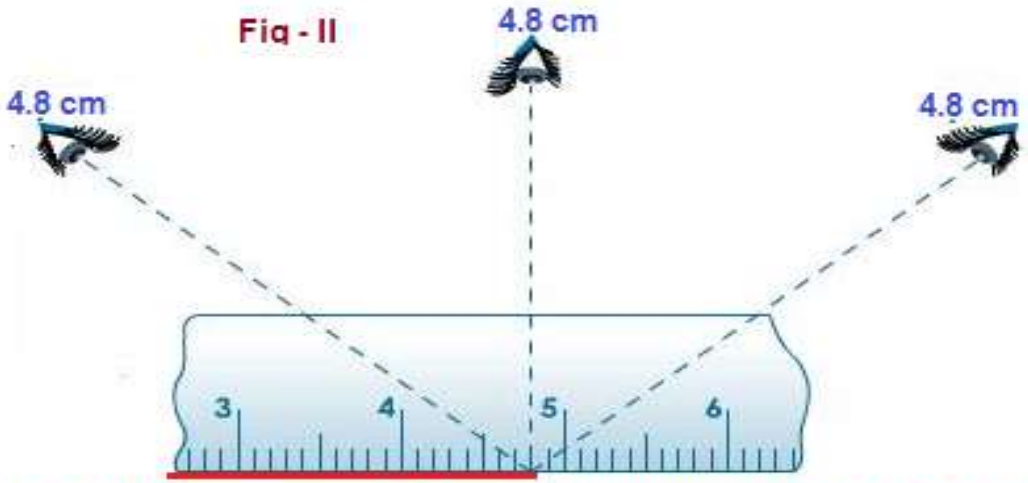
- When noting the reading on a ruler, you should look at it with the eyes directly above the reading, and not in an oblique way.
- Otherwise, you will not be able to note the reading accurately.
- In case the ruler has a damaged edge, place the broken or damaged ruler along the edge of the object whose length is to be measured in such a way that any visible mark coincides with one end of the object.
- Now note the reading on the ruler at the other end of the object. The difference between the two readings gives the length of the object.

Fig - I



Parallax error arises due to thickness of the ruler used

Fig - II



Parallax error vanishes if there is negligible thickness of the ruler or if the scale is placed vertically on the surface .

HOME ASSIGNMENT

Exercise- B 5,6

Q. What do you mean by error of parallax

Q. Explain stepwise how to take measurement of length of an object with a meter scale

Q. Explain stepwise how to take measurement of length of an object with a measuring tape.

THANKING YOU

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