29.07.24

TENDER HEART HIGH SCHOOL, SEC.-33'B, CHD.

CLASS - VII SUBJECT - PHYSICS

CHAPTER - 1 TEACHER - charanjeet kaur

Good Morning Students!

This lesson is of class - VII, for the subject- 'Physics', Topic - 'Speed', which is covered in Chapter - 1 'Physical Quantities and Measurement' in your Physics Textbook titled - 'Concise Physics by Selina Publications'.

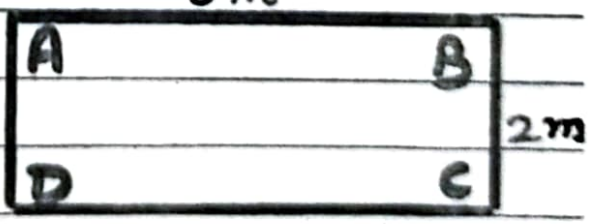
Let us recall, What is DISTANCE

When a body is in motion, the length of path travelled by it in a certain time is called the distance moved by it in that time

S.I unit - metre (m)

FOR EXAMPLE:

FIGURE - 1



If a person starts running from point A on a rectangular track, and reaches back at point A, then

Total distance covered = (AB + BC + CD + DA)

Total distance = 6m + 2m + 6m + 2m = 16m

Students, if the person covers 3 rounds of same rectangular track, then what will be the total distance travelled by the person? (children take a break and in the meantime find the answer of the asked question)

Answer. Total distance = $(3 \times 16)m = 48m$

Larger distances are measured in Kilometre (km).

1 km = 1000 m = 10^3 m

Children, you must have noticed that while your parents are driving, other people overtake your vehicle or sometimes your parent overtakes other vehicles. Why so? This happens because different vehicles are moving with different speeds. Faster moving vehicles overtakes the vehicles which are moving slower relative to them.

SPEED – The distance covered or travelled by a body in unit time is called the speed of the body.

Mathematically, Speed = $\frac{\text{Distance}}{\text{Time}}$

UNITS OF SPEED—

(1) If distance is measured in metre (m) and time in seconds (s), then unit of speed is m/s (or $m\,s^{-1}$) (read as metre per second). It is also the S.I. unit of speed.

(2) If distance is measured in kilometre (km) and time is measured in hours (h), then speed is measured in km/h (or $km\,h^{-1}$)

CONVERSION OF km/h into m/s

$$1\ km/h = \frac{1\ km}{1\ h} = \frac{1000\ m}{60 \times 60\ s}$$

$$\therefore \text{So, } 1\ km/h = \frac{1000}{3600}\ \frac{m}{s} = \frac{5}{18}\ m/s$$

Thus, $\boxed{1\ km/h = \frac{5}{18}\ m/s}$

and, $\boxed{1\ m/s = \frac{18}{5}\ km/h}$

Also, $100\ cm/s = 1\ m/s$

LET US SOLVE FEW EXAMPLES

1) A car travels 20 min. with a constant speed of 84 km/h. find the distance travelled by car (a) in km, (b) in m.

Solution: Here, time = 20 min. = $\frac{20}{60}$ h

So, $t = \frac{1}{3}$ h

Speed = 84 km/h

So, Distance = Speed × Time

= 84 km/h × $\frac{1}{3}$ h

a) Distance = 28 km

b) Distance = 28000 m

2) A car travels a distance of 200 km in 3 h. Find the speed of car in m/s.

Solution: Speed = $\frac{\text{Distance}}{\text{Time}}$ = $\frac{200\text{ km}}{3\text{ h}}$

Speed = $\frac{200}{3}$ km/h

Or, Speed = $\frac{200}{3} \times \frac{1000}{3600}$ m/s

Or, 1 km/h = $\frac{5}{18}$ m/s

Speed = $\frac{200}{3} \times \frac{5}{18}$ m/s

Speed = 18.52 m/s (nearly)

With this I come to an end to this interactive session. Students, you all are required to do tick marked questions in your Physics notebook and also complete True/False, Fill ups, Match the following in your Physics textbook.

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