

motion

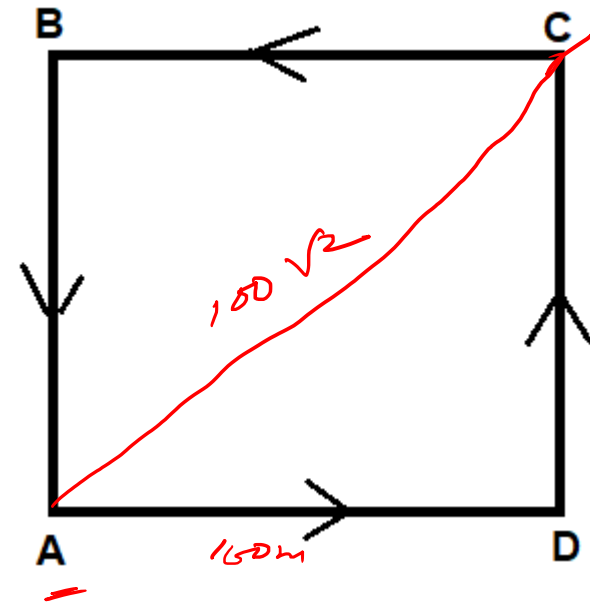
1)

Distance is the actual path covered by a body. It is *scalar* quantity and is measured by the instrument called *odometer*.

2)

A body starts from A and moves along a square park in the given direction at the rate of 100 m/min. If each side of the park is 100 m then find the displacement of the body after 30 minutes.

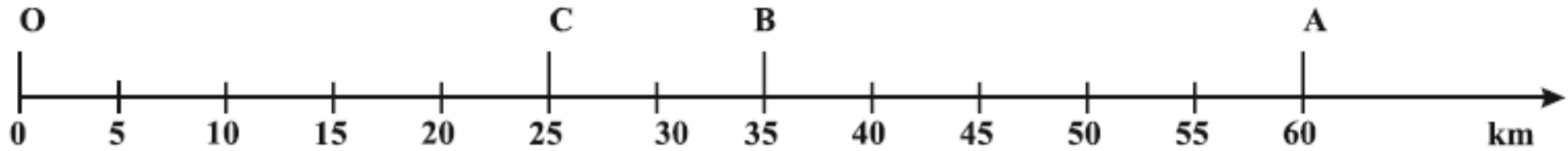
28 m



3)

A car starts from point O. It takes 20 minutes to reach C, then 20 minutes to reach from C to B and thereafter 25 minutes to reach B to A. Find average speed of the whole journey.

$$\frac{25 + 10 + 25}{\frac{20}{60} + \frac{20}{60} + \frac{25}{60}} = \frac{60}{\frac{65}{60}} = \frac{3600}{65} = \frac{720}{13} \text{ km/h}$$
$$= \underline{\underline{55.4 \text{ km/h}}}$$



4)

What is the SI unit of acceleration ?

m/s^2

5) Acceleration is vector quantity.

6)

Convert 54 kmph into m/s.

$$54 \times \frac{5}{18} = \underline{15 \text{ m/s}}$$

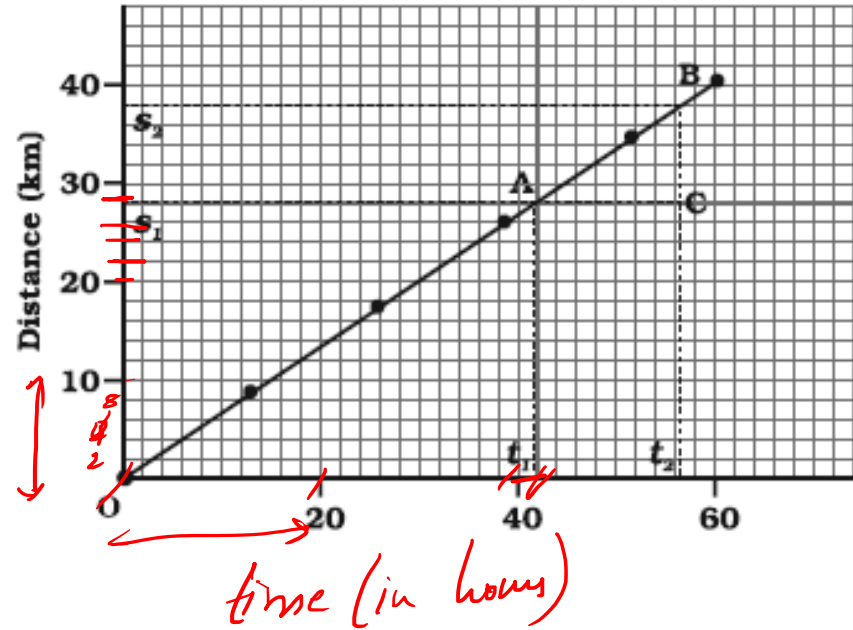
7)

Find speed of the body.

$$s = 28 \text{ km}$$

$$t = 42 \text{ hrs}$$

$$sp = \frac{28}{42} = \frac{2}{3} \text{ kmph}$$

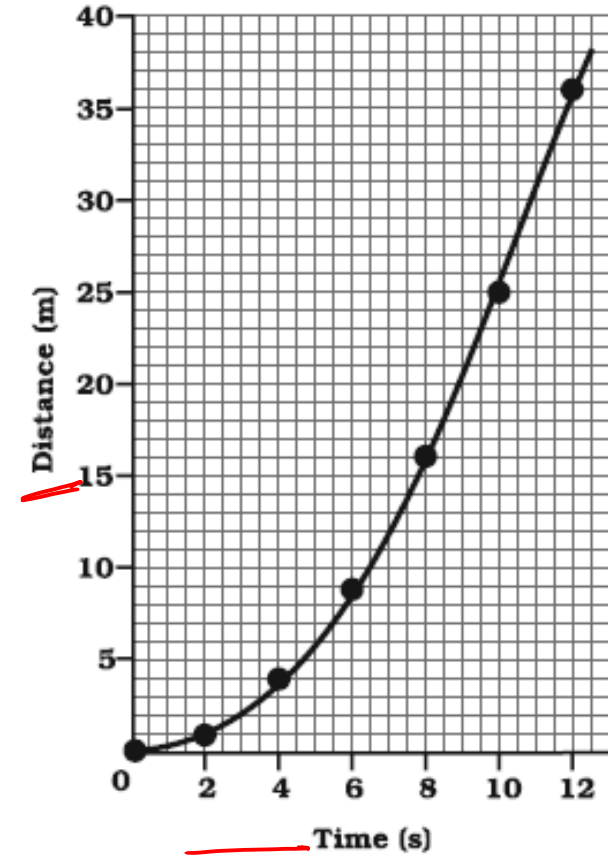


0-20 → 10 divisions
1 division = 2 units
least count

8)

What does following graph represent?

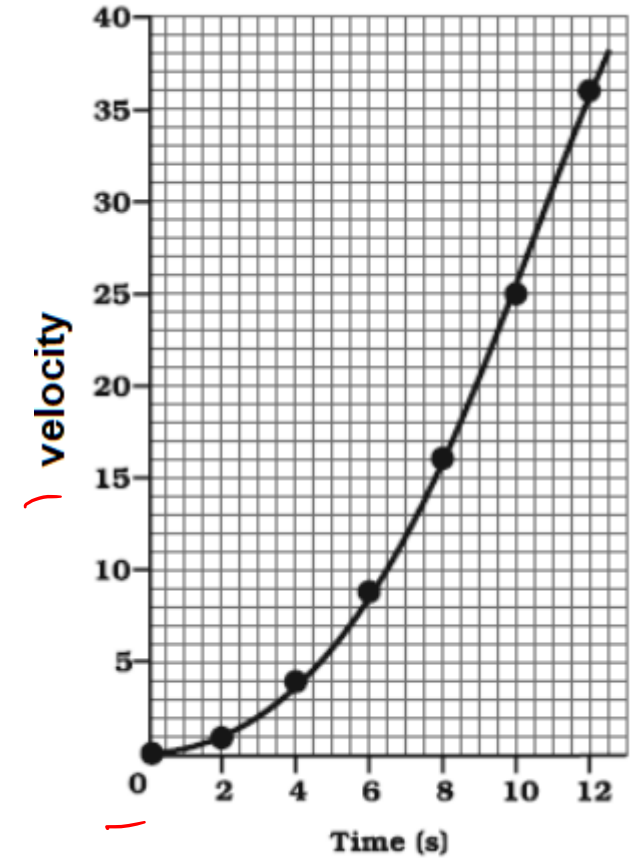
*non uniform speed
(velocity)*



9)

What does following graph represent?

*non-uniform
accⁿ*



10)

Write third equation of motion.

$$v^2 - u^2 = 2as$$

11)

Write second equation of motion for a body starting from rest.

$$u = 0$$

$$s = \underline{u}t + \frac{1}{2}at^2$$

$$\underline{\underline{s = \frac{1}{2}at^2}}$$

12)

Write third equation of motion for a body moving with uniform velocity.

$$a = 0$$

$$v^2 - u^2 = 2as$$

$$v^2 - u^2 = 2(0)s$$

$$v^2 - u^2 = 0 \quad \checkmark$$

$$v^2 = u^2$$

13)

A car starts from rest and attains a velocity of 20 m/s in 5 seconds. Find acceleration of the car.

$$u = 0, \quad v = 20, \quad t = 5$$

$$a = \frac{20 - 0}{5} = \underline{4 \text{ m/s}^2}$$

14)

A car starts from rest and attains a velocity of 20 m/s in 5 seconds. Find distance travelled during this time by the car.

$$u = 0$$

$$v = 20$$

$$t = 5$$

$$a = 4$$


$$s = ut + \frac{1}{2}at^2$$

$$= 0 \cdot t + \frac{1}{2} \cdot 4 \cdot 5^2$$

$$s = \underline{50 \text{ m}}$$

15)

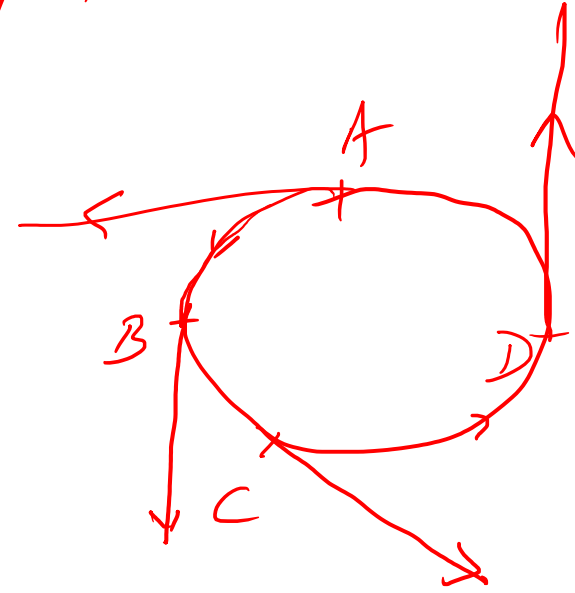
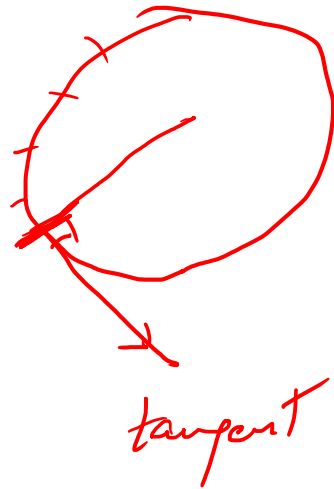
Write formula to find speed of a body moving in a circular path.


$$\frac{2\pi r}{t}$$

16)

Why is circular motion always accelerated?

direction keeps on changing



17)

What is the direction of the motion of a body moving in a circular path?

tangent at that point
↓

18)

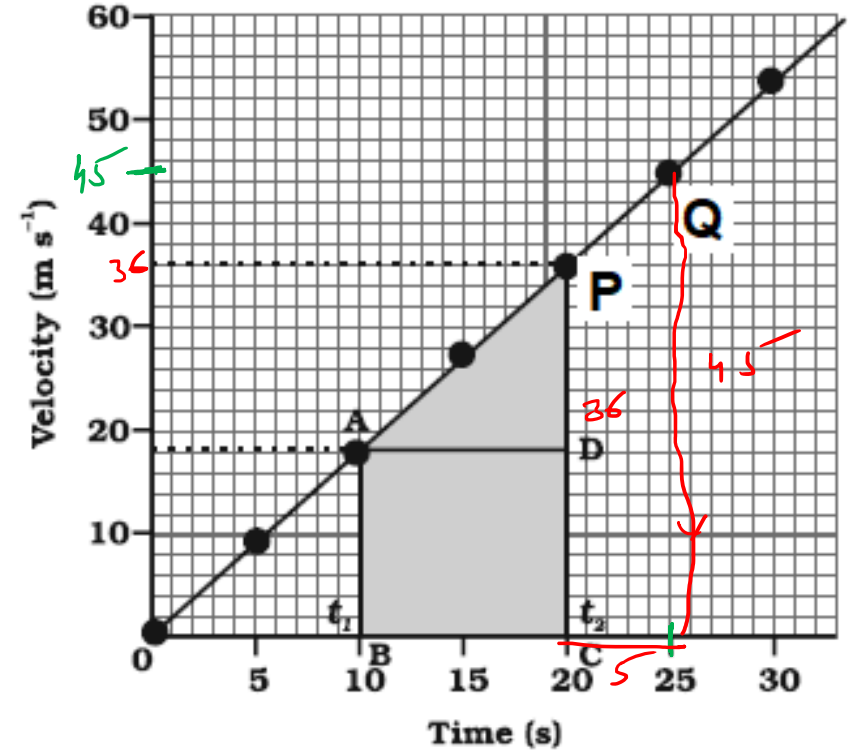
What does area of velocity-time graph determine?

dis/disp

19)

Find the distance covered by a body during PQ.

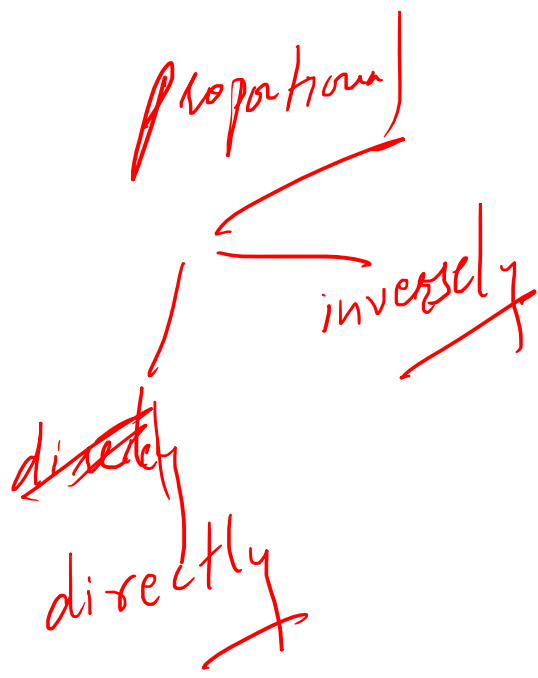
$$\begin{aligned} &= \frac{1}{2} (36 + 45) \times 5 \\ &= \frac{1}{2} \times 81 \times 5 \\ &= \frac{405}{2} \\ &= \underline{\underline{202.5 \text{ m}}} \end{aligned}$$



20)

If velocity of body changes equally in equal intervals of time then body is said to be having _____.

*uniform
accⁿ*



$$\checkmark \frac{x \propto y}{x}$$

$$x \propto y$$

time	distance
1 hr	= 100
2 hr	200
3 hr	300

$$\textcircled{x} \propto \textcircled{\frac{1}{y}}$$

workers	time
10	6 months
20	3 "

speed ++ time ---

$$sp \propto \frac{1}{t}$$

\propto }