



Class-IX

Physics

Date:-20/04/2020

Chapter-8 (Motion)

- ❖ Watch the video of science Chapter-8 (Motion), Part-5 from **Optimum Online E-Learning Platform**
- ❖ Answer the following question
 1. What is speed?
 2. What is velocity?
 3. What do you mean by uniform motion?
- ❖ Answers of the previous day homework questions
 1. An object has moved through a distance. Can it have zero displacement? If yes, support your answer with an example

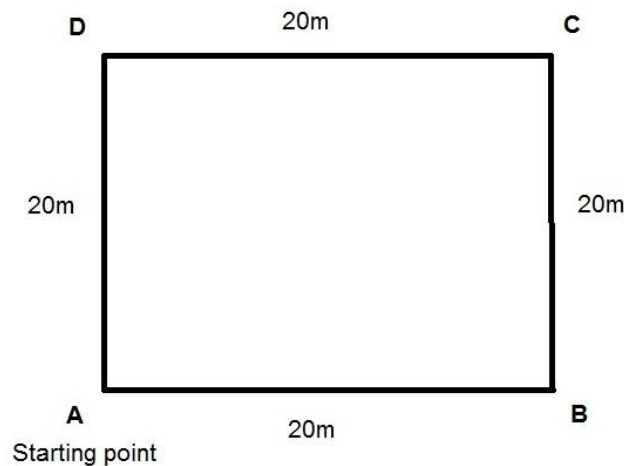
Answer-

Yes, if an object reaches the same position from where it started to move then displacement is zero. For example, let an object is moving on a circular track, then after completing one round the total displacement is zero.

2. A farmer moves along the boundary of a square field of side 20m in 40s. What will be the magnitude of displacement of the farmer at the end of 2 minutes 10 seconds from his initial position?

Answer-

Let the corners of the field are A, B, C, and D as shown below



Then after 2 minutes 10 seconds the farmer will be at, C
Therefore,

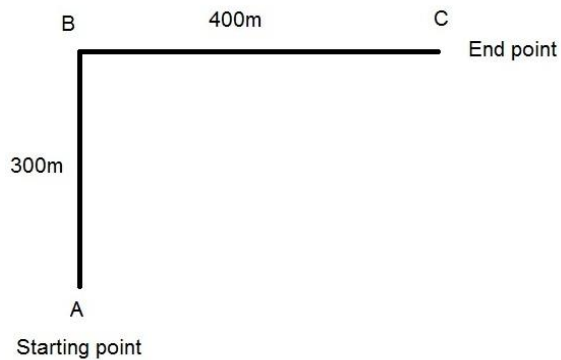
$$\begin{aligned}\text{Displacement} &= AC \\ &= \sqrt{AB^2 + BC^2} \\ &= \sqrt{20^2 + 20^2} \\ &= \sqrt{2 \times 20^2} \\ &= \sqrt{2 \times 20 \times 20} \\ &= 20\sqrt{2} \text{ m}\end{aligned}$$

Therefore, displacement after 2 minutes 10 seconds is $20\sqrt{2}$ m.

3. Rahul moves 400m towards west and then turns his right and moves 300m. Calculate the displacement of Rahul from his starting position.

Answer-

Let Rahul starts moving from point A and reaches at point C as shown below



Then,

$$\text{Displacement} = AC$$

$$= \sqrt{AB^2 + BC^2}$$

$$= \sqrt{(300)^2 + (400)^2}$$

$$= \sqrt{(3 \times 100)^2 + (4 \times 100)^2}$$

$$= \sqrt{3^2 \times 100^2 + 4^2 \times 100^2}$$

$$= \sqrt{100^2 \times (3^2 + 4^2)}$$

$$= \sqrt{100^2 \times 5^2}$$

$$= 100 \times 5$$

$$= 500 \text{ m}$$

Therefore, displacement of Rahul is 500 m.

4. An athlete runs along a circular track of radius 100m. He completes one round in 2 minutes 10 seconds. What will be the magnitude of displacement of the athlete at the end of 3 minutes 15 seconds.

Answer-

After 3 minutes 15 seconds the position of the athlete will be opposite to the initial position. Therefore, the displacement of the athlete is equal to the diameter of the circular track.

Therefore,

$$\begin{aligned}\text{Displacement} &= \text{diameter of the circular track} \\ &= 2 \times \text{radius of the track} \\ &= 2 \times 100 \\ &= 200 \text{ m.}\end{aligned}$$

5. What is S.I unit of distance?

Answer-

S.I unit of distance is meter (m)

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