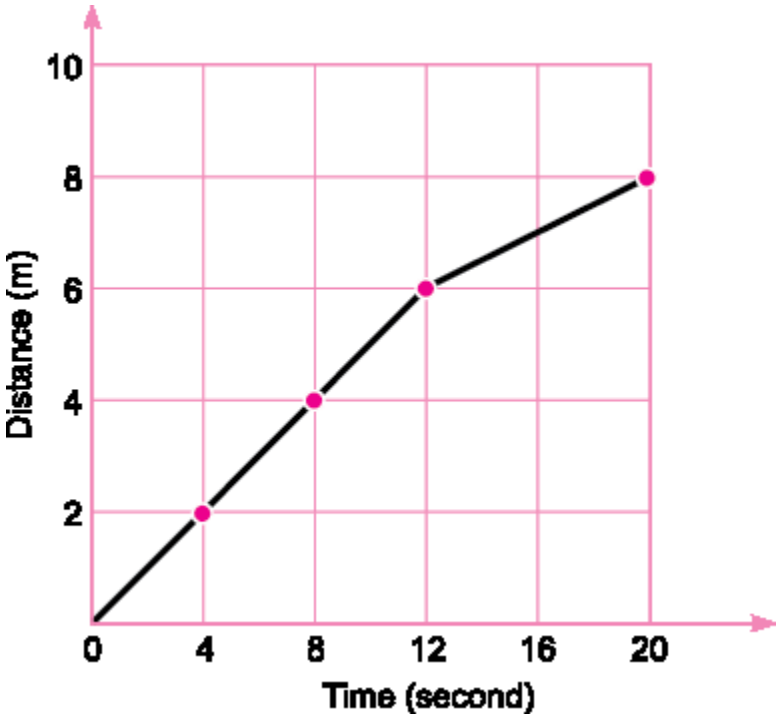
Long Answer Questions

Q.1. Given below as figure is the distance-time graph of the motion of an object.



[NCERT Exemplar]

Q. What will be the position of the object at 20 s?

Ans. 8 m from the starting point.

Q. What will be the distance travelled by the object in 12 s?

Ans. 6 m

Q. What is the average speed of the object?

Ans.

$$\text{Average speed} = \frac{\text{Total distance travelled}}{\text{Total time taken}}$$

$$\frac{8\ m}{20\ s} = 0.4\ \text{m/s}$$

Q.2. Distance between Bholu's and Golu's house is 9 km. Bholu has to attend Golu's birthday party at 7 o'clock. He started from his home at 6 o'clock on his bicycle and covered a distance of 6 km in 40 minutes. At that point he met Chintu and he spoke to him for 5 minutes and reached Golu's birthday party at 7 o'clock.

With what speed did he cover the second part of the journey? Calculate his average speed for the entire journey.

[NCERT Exemplar]

Ans.

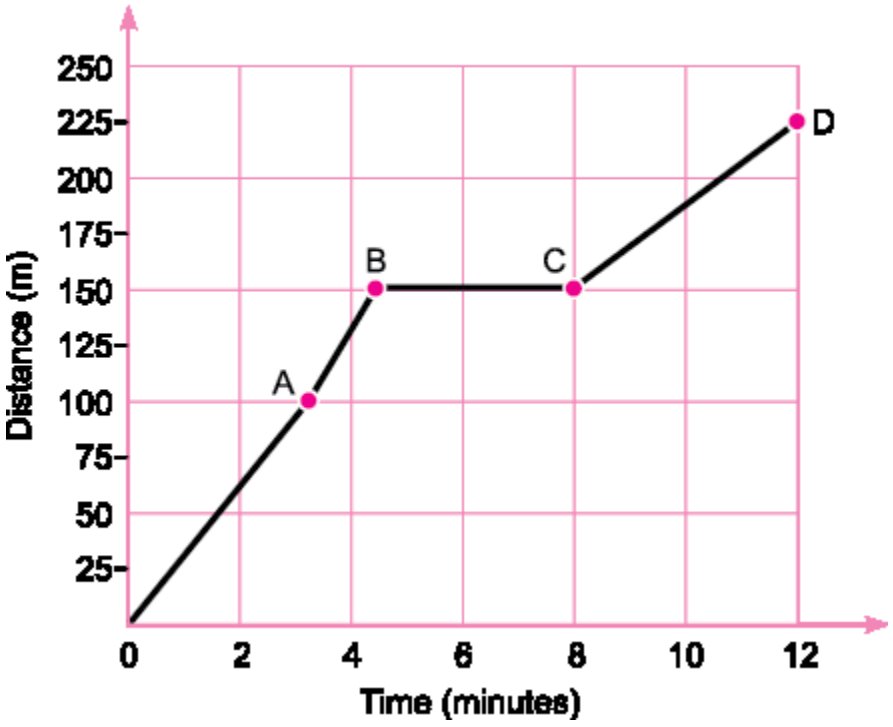
The speed with which Bholu covered the second part of the journey

$$= \frac{\text{Distance left to reach } \textit{Golu's} \text{ house}}{\text{Time left}}$$

$$= \frac{9 \text{ km} - 6 \text{ km}}{(1 \text{ hour} - 45 \text{ min})} = \frac{3 \text{ km}}{1/4 \text{ h}} = = 12 \text{ km/h}$$

$$\text{Average speed} = \frac{\text{Total distance travelled}}{\text{Total time taken}} = \frac{9 \text{ km}}{1 \text{ h}} = 9 \text{ km/h}$$

Q.3. Boojho goes to the football ground to play football. The distance-time graph of his journey from his home to the ground is given in figure.



[NCERT Exemplar]

Q. What does the graph between point B and C indicate about the motion of Boojho?

Ans. Boojho is at rest, i.e., his speed is zero because the graph is constant between point B and C.

Q. Is the motion between 0 to 4 minutes uniform or non-uniform?

Ans. Non-uniform

Q. What is his speed between 8 and 12 minutes of his journey?

Ans.

$$\text{Speed} = \frac{225 - 100}{12 - 8} = \frac{75}{4} = 18.75 \text{ m/min}$$

Q.4. With the help of an activity, explain how will you measure the time period of a simple pendulum.

Ans. Activity:

- Suspend a metallic ball (bob) by a long thread from a rigid support. Your simple pendulum is ready.
- Set the simple pendulum in motion.
- Note the time in your watch when bob is at an extreme position (say A).
- When the bob again comes to the position A, count 1 (one). Each time the bob reaches this position (A), increase the count by 1 (one).
- Check the time after 25 such oscillations. Find the time taken in 25 oscillations.