



INDIAN SCHOOL AL WADI AL KABIR



CLASS: VII	DEPARTMENT: SCIENCE 2025-2026	DATE: 07/09/2025
TEXTBOOK- Q & A	CHAPTER 9: MOTION AND TIME	Note: A4 FILE FORMAT
NAME OF THE STUDENT :	CLASS & SEC:	ROLL NO:

1. Classify the following as motion along a straight line, circular, or oscillatory motion:

- (i) Motion of your hands while running. - **oscillatory**
- (ii) Motion of a horse pulling a cart on a straight road. - **Motion along a straight line**
- (iii) Motion of a child in a merry-go-round. - **Circular motion**
- (iv) Motion of a child on a see-saw. - **Oscillatory motion**
- (v) Motion of the hammer of an electric bell. - **Oscillatory motion**
- (vi) Motion of a train on a straight bridge. - **Motion along a straight line**

2. Which of the following are not correct?

- (i) The basic unit of time is a second.
- (ii) Every object moves with a constant speed.
- (iii) Distances between two cities are measured in kilometres.
- (iv) The time period of a given pendulum is constant.
- (v) The speed of a train is expressed in m/h.

Ans. Incorrect statements are: (ii) and (v)

3. A simple pendulum takes 32 s to complete 20 oscillations. What is the time period of the pendulum?

Ans. Number of oscillations = 20

Total time taken to complete 20 oscillations = 32 s

Time period = Total time taken / Number of oscillations = $32 / 20 = 1.6$ s

4. The distance between two stations is 240 km. A train takes 4 hours to cover this distance. Calculate the speed of the train.

Ans. Distance between two stations = 240 km

Total time taken = 4 h

Speed = Distance / Time = $240 / 4 = 60$ km/h

5. The odometer of a car reads 57321.0 km when the clock shows the time 08:30 AM. What is the distance moved by the vehicle if at 08:50 AM, the odometer reading has changed to 57336.0 km? Calculate the speed of the car in km/min during this time. Express the speed in km/h also.

Ans. Initial reading of the odometer = 57321.0

Final reading of the odometer = 57336.0

Distance covered by the car = Final reading of the odometer – Initial reading of the odometer

$$= 57336.0 - 57321.0 = 15 \text{ km}$$

Starting time of car is 8:30 am and it stops at 8:50 am

Hence, time taken by car = 20 min.

a) Speed = Distance / Time = $15/20 = 0.75$

km/min b) $20 \text{ min} = 1/60 \times 20 = 1/3 \text{ h}$

Speed = Distance / Time = $15 \div 1/3 = 15 \times 3/1 = 45 \text{ km/h}$

6. Salma takes 15 minutes from her house to reach her school on a bicycle. If the bicycle has a speed of 2 m/s, calculate the distance between her house and the school.

Ans. Time taken by Salma to reach her school by bicycle = 15 mins = $15 \times 60 = 900 \text{ s}$

Speed of Salma's bicycle = 2m/s

Speed = Distance / Time

Distance covered = speed x time taken = $2 \times 900 = 1800 \text{ m}$

We know, $1000\text{m} = 1 \text{ km}$

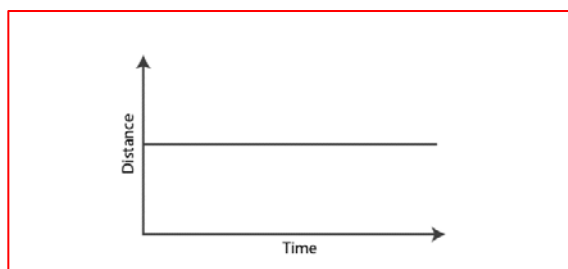
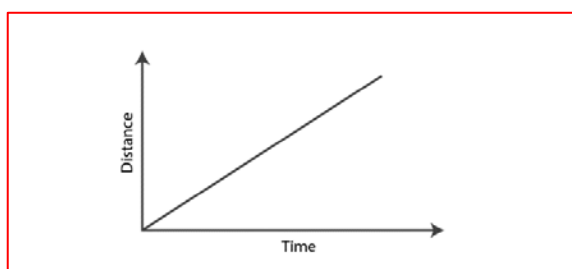
So, $1800\text{m} = 1/1000 \times 1800 = 1.8 \text{ km}$.

7. Show the shape of the distance-time graph for the motion in the following cases:

(i) A car moving with a constant speed.

(ii) A car parked on a side road.

Ans.



8. Which of the following relations is correct?

(i) Speed = Distance $\times$ Time

(ii) Speed = Distance/Time

(iii) Speed = Time/Distance

(iv) Speed = $1/\text{Distance} \times \text{Time}$

Ans. (ii) Speed = Distance/Time

9. The basic unit of speed is:

- (i) km/min (ii) m/min (iii) km/h (iv) m/s

Ans. (iv) m/s

10. A car moves with a speed of 40 km/h for 15 minutes and then with a speed of 60 km/h for the next 15 minutes. The total distance covered by the car is:

- (i) 100 km (ii) 25 km (iii) 15 km (iv) 10 km

Ans. (ii) 25 km

Calculation: When the speed of the car is 40 km/h,

The Time taken = 15 min = $15/60 = 0.25$ h

Speed = Distance/Time

Distance covered = speed x time taken
= $40 \times 0.25 = 10$ km When

the speed of the car is 60 km/h- Speed =

Distance/Time

Distance covered = speed x time taken
= $60 \times 0.25 = 15$ km

Total distance covered by the car = $10 + 15 = 25$ km.

11. Suppose the two photographs, shown in Fig. 13.1 and Fig. 13.2, had been taken at an interval of 10 seconds. If a distance of 100 metres is shown by 1 cm in these photographs, calculate the speed of the fastest car.



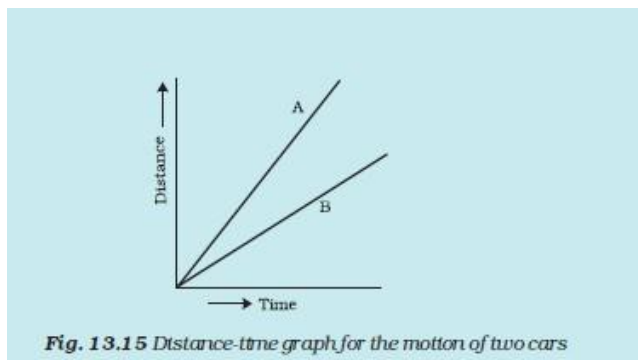
Fig. 13.1 Vehicles moving in the same direction on a road



Fig. 13.2 Position of vehicles shown in Fig. 13.1 after some time

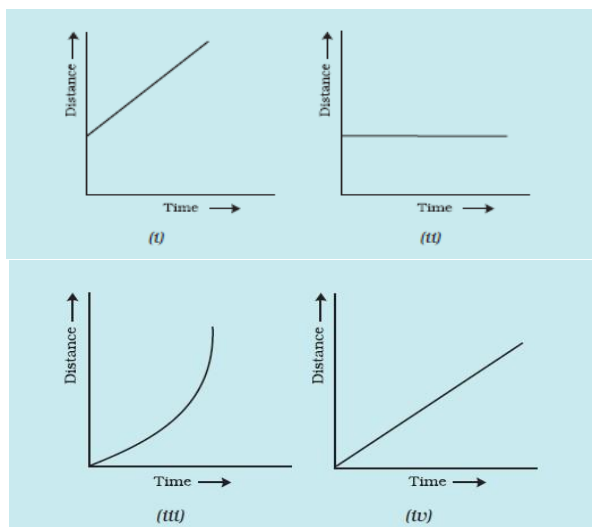
**Ans. The distance covered by the green car, when measured on the scale, is 1.2 cm.
 Since it is given that 1 cm represents 100 m,
 Therefore, 1.2 cm is equivalent to 120 m. Distance travelled by the car = 120 m
 Time taken to cover this distance = Time interval between the two photographs = 10 s
 Speed = Distance/Time = $120/10 = 12 \text{ m/s}$**

12. Fig. 13.15 shows the distance-time graph for the motion of two vehicles, A and B. Which one of them is moving faster?



Ans. Vehicle A is moving faster than Vehicle B. The greater the slope of the distance-time graph, the higher the speed.

13. Which of the following distance-time graphs shows a truck moving with a speed that is not constant?



Ans. iii)

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