

**CBSE Class-VII Science**  
**NCERT Solutions**  
**CHAPTER-13**  
**MOTION AND TIME**

---

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

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

**Answer:** Classification of motion

- (i) Oscillatory motion
- (ii) Straight line
- (iii) Circular motion
- (iv) Oscillatory motion
- (v) Oscillatory motion
- (vi) Straight line.

**Question 2.** Which of the following are not correct?

- (i) The basic unit of time is second.
- (ii) Every object moves with a constant speed.
- (iii) Distance between two cities is measured in kilometers.
- (iv) The time period of a given pendulum is not constant.
- (v) The speed of a train is expressed in m/h.

**Answer:** (ii), (iv) & (v).

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

**Answer:** Number of oscillations = 20

Total time taken = 32 s

We know that time period of a given pendulum is the time taken by it to complete one oscillation.

$$\text{Thus, Time period} = \frac{\text{Total time taken}}{\text{Number of oscillations}} = \frac{32 \text{ s}}{20} = 1.6 \text{ s}$$

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

**Answer:** The distance b/w two stations = 240 Km

Time taken to cover this distance = 4 Hr

$$\text{Now Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{240 \text{ km}}{4 \text{ hr}} = 60 \text{ km/h}$$

Therefore, speed of the train will be 60 km/h

**Question 5.** The odometer of a car reads 57,321.0 km when the clock shows the time 8.30 AM. The odometer reading was changed to 57,336.0 km. calculate the speed of the car in km/min during this time. Express the speed in km/h also.

**Answer:** Initial reading of odometer = 57321.0 Km

Final reading of odometer = 57336.0 Km

$$\begin{aligned} \text{Total Distance covered} &= \text{Final reading of odometer} - \text{Initial reading of odometer} \\ &= 57336.0 - 57321.0 = 15.0 \text{ Km} \end{aligned}$$

Initial Time = 8:30 AM

Final Time = 8:50 AM

$$\text{Total time taken} = \text{Final time} - \text{Initial time} = 8:50 - 8:30 = 20 \text{ min}$$

$$\text{We Know that, Speed} = \frac{\text{distance covered}}{\text{Time taken}} = \frac{15}{20} = 0.75 \text{ Km/min}$$

$$\text{Speed in Km/h} = 0.75 \times 60 = 45 \text{ Km/h}$$

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

**Answer:** Speed of bicycle = 2 m/s

$$\text{Total time taken} = 15 \text{ min} = 15 \times 60 = 900 \text{ s}$$

We know that,

The distance covered =  $Speed \times Time\ taken =$

$$2 \times 900 = 1800\ m = 1.8\ Km$$

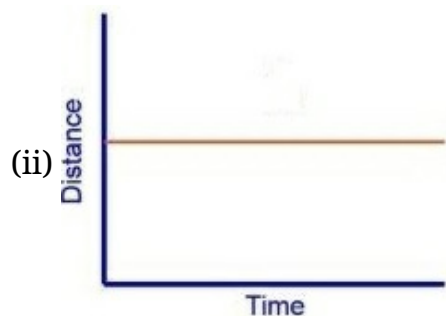
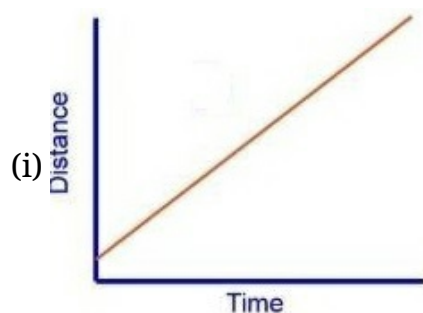
Distance b/w house and school is 1800 m or 1.8 Km

**Question 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.

**Answer:**



**Question 8.** Which of the following relations is correct?

(i)  $Speed = Distance \times Time$ .

(ii)  $Speed = \frac{Distance}{Time}$

(iii)  $Speed = \frac{Time}{Distance}$

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

**Answer:** (ii)  $Speed = \frac{Distance}{Time}$

**Question 9.** The basic unit of speed is :

(i) Km/min

(ii) m/min

(iii) km/h

(iv) m/s

**Answer:** (iv) m/s.

**Question 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

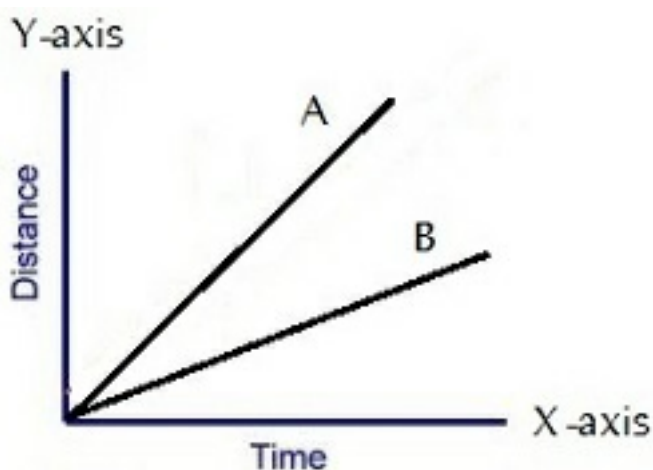
(iv) 10 km

**Answer:** (ii) 25 km

**Question 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 meters is shown by 1 cm in these photographs, calculate the speed of the blue car.

**Answer:** Speed =  $100 \text{ m}/10\text{s} = 10 \text{ m/s}$

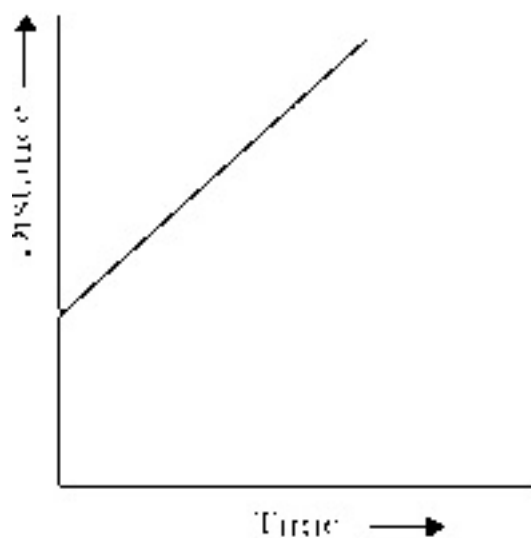
**Question 12.** Fig. 13.5 shows the distance-time graph for the motion of two vehicles A and B. which is one of them moving faster?



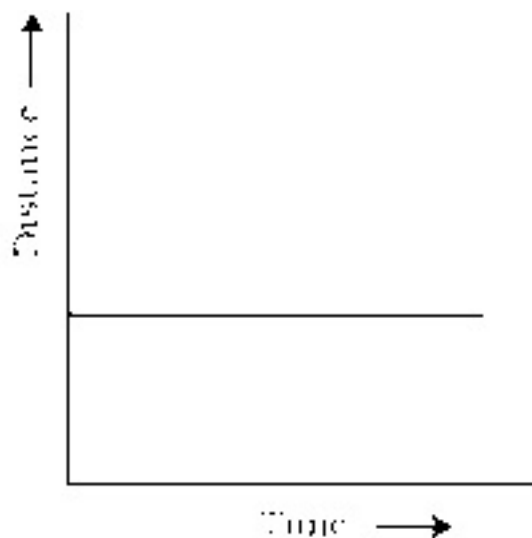
Distance - time graph for the motion of two cars

**Answer: B**

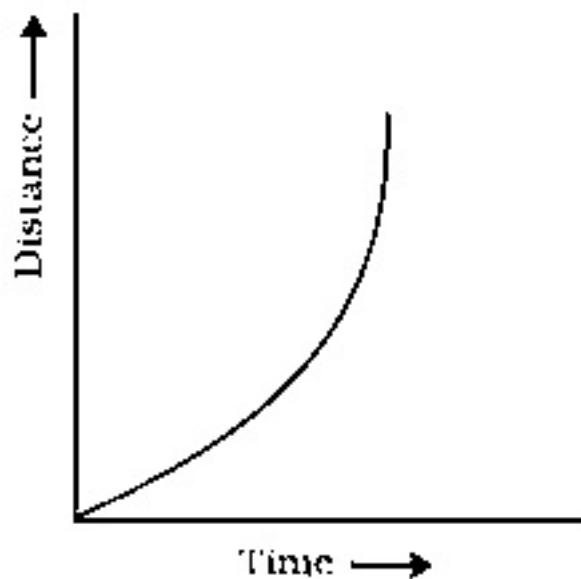
**Question 13.** Which of the following distance time-graph a truck moving with speed which is not constant.



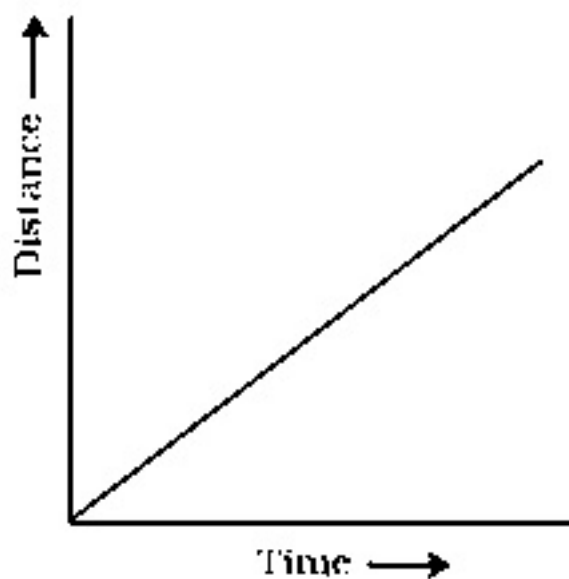
(i)



(ii)



Time →



Time →

**Answer: (iii)**