# NCERT Solutions for 7th Class Science: Chapter 13-Motion and Time

Class 7: Science Chapter 13 solutions. Complete Class 7 Science Chapter 13 Notes.

## NCERT Solutions for 7th Class Science: Chapter 13-Motion and Time

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## Exercises

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**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 a 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**

(i) Oscillatory motion

(ii) Straight line motion

(iii) Circular motion

(iv) Oscillatory motion

(v) Oscillatory motion

(vi) Straight line motion

**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) Distances between two cities are measured in kilometres.**

**(iv) The time period of a given pendulum is not constant.**

**(v) The speed of a train is expressed in m/h.**

**Answer**

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(i) Correct

(ii) Not correct

Every object may or may not moves with a constant speed.

(iii) Correct

(iv) Not correct

Time period of a given pendulum is always constant because it depends on the length of the pendulum..

(v) Not correct

The speed of a train is measured in km/h or in m/s.

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

**Answer**

Numbers of oscillations = 20

Time taken = 32 sec

Time period of the pendulum = Time taken/Numbers 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.**

**Answer**

Distance between two stations = 240 km

Time taken = 4 hrs

Speed of train = Distance/Time taken = 240/4 = 60 km/hr

**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 car, if at 08:50 AM, the odometer reading**

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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.

**Answer**

Initial reading of odometer = 57321.0 km

Final reading of odometer = 57336.0 km

Initial Time = 8:30 AM

Final Time = 8:50 AM

Total distance covered = Final reading of odometer - Initial reading of odometer

=57336.0 - 57321.0 = 15.0 km

Total time taken = Final Time - Initial Time =  8:50 AM - 8:30 AM = 20 minutes

20 minutes = 20/60 hrs = 1/3 hrs

Speed of the car = Total distance covered/Total time taken = 15.0/20 = 0.75 km/min

Speed of the car in km/hr =15/(1/3) = 45 km/hr

**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.**

**Answer**

Speed of bicycle = 2 m/s

Time taken = 15 mins = 15 × 60 secs = 900 secs

A/q,

Speed = Distance/Time

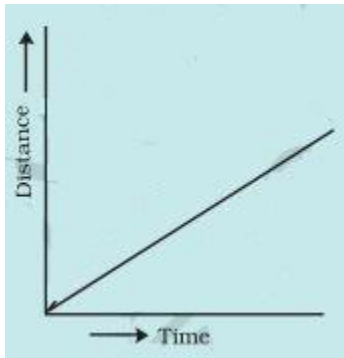⇒ Distance = Speed × Time = 2 × 900 metres = 1800 metres = 1.8 km

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

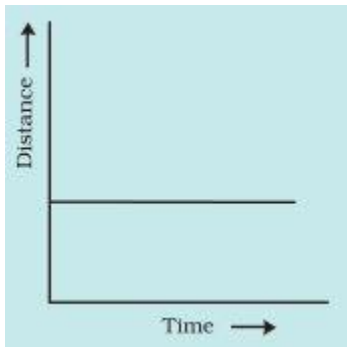**(i) A car moving with a constant speed.**

**(ii) A car parked on a side road.**

**Answer**

(i)The graph will be a straight line passing through the origin.



(ii) The graph is a straight line parallel to x-axis or time axis.



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

**(i) Speed = Distance × Time**

**(ii) Speed = Distance/Time**

**(iii) Speed = Time/Distance**

**(iv) Speed = 1/Distance × Time**

**Answer**

(ii) Speed = Distance/Time

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

**(i) km/min**

**(ii) m/min**

**(iii) km/h**

**(iv) m/s**

**Answer**

(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**

**Answer**

(ii) 25 km

Firstly, the car is moving with 40km/h for 15 minutes.

15 minutes = 15/60 hrs = 1/4 hrs

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Distance covered = 40 × 1/4 = 10 km

Secondly, the car is moving with 60km/h for 15 minutes.Distance covered = 60 × 1/4 = 15 km

Total distance covered = 10 km + 15 km = 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 blue car.**
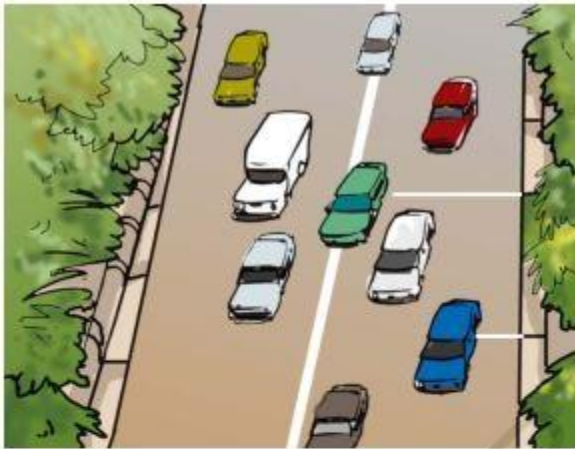
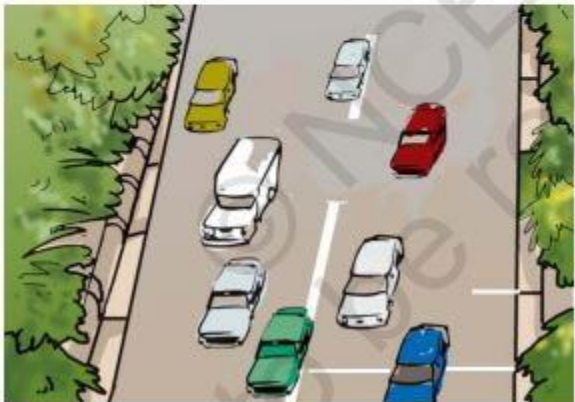

**Fig. 13.1** *Vehicles moving in the same direction on a road*



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

**Answer**

First, measure the distance with the help of scale and then proceed as given below.

Suppose the distance measured by scale is 2cm.

Multiply 2 with 100 to get the actual distance = 2 × 100 = 200 m.      (1cm = 100m)

Interval time between the photos taken = 10 s.

Speed of the blue car = 200/10 m/s = 20 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?**
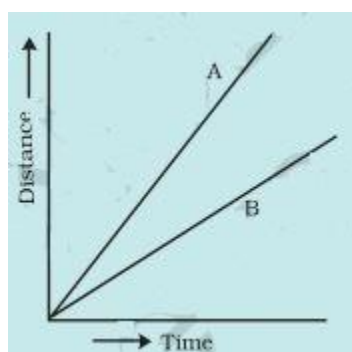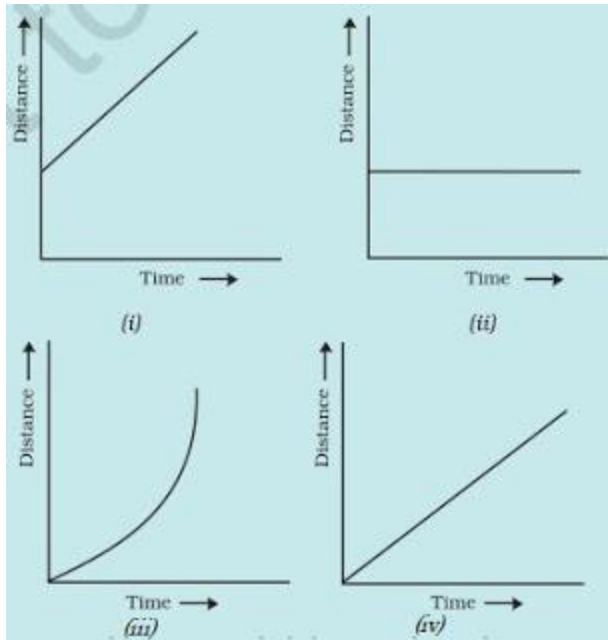


**Answer**

Vehicle A is moving faster because it has more slope than vehicle B. In distance-time graph, speed is measured by its slope.

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

**Answer**

Option (iii) because the slope of the graph is not a straight line and hence it does not show a uniform motion.

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