CLASS – 7th
Subject – Science
Chapter – 13th

Motion and Time

(NOTE-Book)

1) Classify the following as motion along a stright line, circular or osicillatory motion.

1) Motion of your hand while running
Ans → (oscillatory motion)

2) Motion of a houuse pulling a cart on a straight road.
Ans → (Motion along a stright line)

3) Motion ~~along~~ of a child in a merry-go-round.
Ans → (Circular Motion)

4) Motion of a child on a see-saw.
Ans → (oscillatory motion)

5) Motion of the hammer of an electric bell.
Ans → (Oscillatory Motion)

6) Motion of a train on a straight bridge.
Ans → (Motion along a straight line)

2) which of the following are not correct.

Ans →

ii) Every object moves with a constant speed.

iv) The Time period of a given pendulum is constant.

V) The speed of a train is expressed in m/h.

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 oscill-ations = 32 s

$= 32$

Time period $= \frac{\text{total time taken}}{\text{Number of oscillations}}$

$= \frac{32}{20}$

$= \boxed{1.6\ s}$

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

Ans ⟶ Distance between two stations = 240 kms

total time take = 4 hrs | 240 minutes

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$= \frac{240}{4}$$

$$= \boxed{60 \text{ km/h}}$$

5) The odometers of 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 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 odometer – initial reading of the odometer

⇒ 57336.0 − 57321.0

⇒ **15 kms**

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

Hence, time taken by car = 20 min

$$\text{Speed} = \frac{\text{Distance}}{\text{time}}$$

$$= \frac{15}{20}$$

⇒ **0.75 km/min**

$$\because 20 \text{ min} = \frac{1}{60} \times 20$$

$$= \frac{1}{3} \text{ h}$$

$$\text{Speed} = \frac{\text{Distance covered}}{\text{Time taken}}$$

$$= \frac{15}{1/3}$$

Ans. ⇒ **45 km/h**

6) Salma takes 15 minutes from her house to reach her school on a bicycle. If the bicycle has 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 min = 15×60

=> 900s

Speed of salma bicycle's = 2m/s

$$\text{Speed} = \frac{\text{Distance covered}}{\text{Time taken}}$$

distance covered = speed × time taken

= 2 × 900

= 1800 m

1 km = 1000m

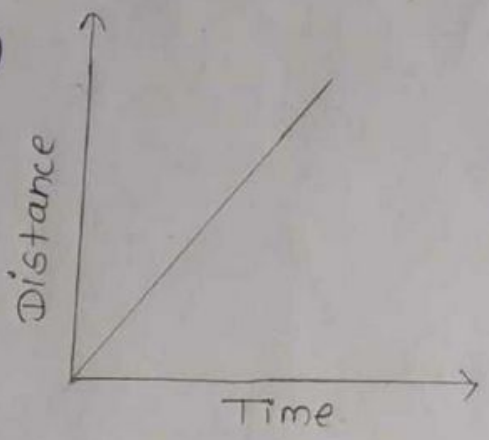
$$1800\text{m} = \frac{1}{1000} \times 1800$$

=> 1.8 kms

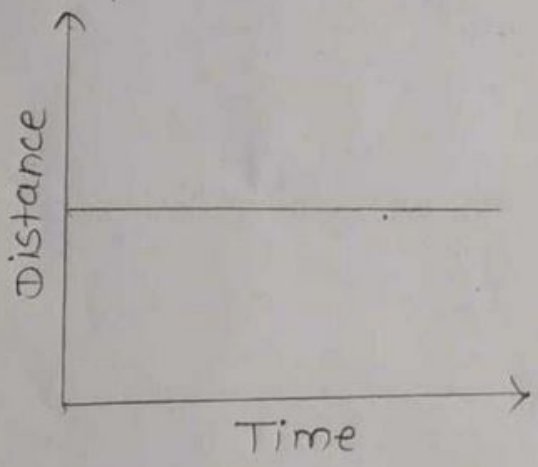
7) Show the shapes of the distance time-graph for the motion in the following case.

a) A car moving with a constant speed.

Ans → (a)



b) A car parked on a side road.



8) which of the following relations is correct.

Ans → ii) speed = $\frac{\text{Distance}}{\text{time}}$

9) The basic unit of speed is

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 :

Ans ⟶ ii) 25 km

Calculation :-

(1) When the speed of car is 40 km/h

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

$$\text{Speed} = \frac{\text{Distance covered}}{\text{Time taken}}$$

Distance covered (d1) = Speed x Time taken

= 40 x 0.25

= 10 kms

2) When the speed of car is 60 km/h

$$\text{Speed} = \frac{\text{Distance Covered}}{\text{Time taken}}$$

Distance covered d2 = Speed x Time taken

= 60 x 0.25

= 15kms

Total distance covered by the car = d1 + d2

= 10 + 15

⇒ 25kms

11) Suppose the two photograph, shown in fig 13.1 and 13.2, had been taken at an interval of 10 second. If the distance of 100 meters is shown by 1 cm in these photograph, calculate the speed of the faster car.

Answer]

The distance covered by the blue car (as evident from the photograph) from one horizontal white strip to another, which is measured by scale is 1.2 cm. It is 1 cm equivalent to 120 m

Distance travelled by the car = 120m

Time taken cover this distance = Time interval between the two photograph

= 10 s

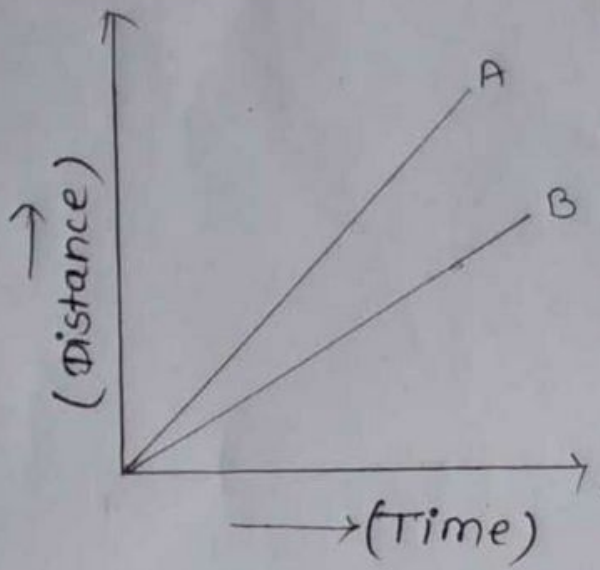
$$\text{speed} = \frac{\text{Distance covered}}{\text{Time taken}}$$

$$= \frac{120}{10}$$

$$= \boxed{12 \text{ m/s}}$$

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)

13) which of the following distance time-graph shows a truck moving with speed which is not constant.

Ans → iii)