#637802

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 a hammer of an electric bell.

(vi) Motion of a train on a straight bridge.

Solution

(i) Oscillatory motion

(ii) Linear motion

(iii) Circular motion

(iv) Oscillatory motion

(v) Oscillatory motion

(vi) Linear motion.

#637865

A simple pendulum takes 32s to complete 20 oscillations, what is the time period of the pendulum?

Solution

Time taken to complete 20 oscillations $= 32$s

Time taken to complete 1 oscillation $= 32/20$s 1.6s

Time period of a pendulum is time taken by it to complete 1 oscillation.

Time period of pendulum is 1.6 seconds.

#637870

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

Solution

Distance $= 240$km

Time taken $= 4$ hours

Speed$=$ Distance covered $/$time taken $= 240km/4$hammer

$= 60km/h$

Speed of train $= 60km/h.$

#637879

The odometer of a car reads 57321.0km 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 57336.0km ? Calculate the speed of the car in km$/$min during this time. Express the speed in km$/$h also.

Solution

Distance $= 57336.0km - 57321km = 15km$

Speed in km$/$min $= 15km/20min = 3/4km/min$

Speed in $km/hr = 15km/1/3hr$

$= (15 \times 3)km/hr$

$= 45km/hr.$

#637881

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

Solution

Time taken $=15$min

Speed $=2$m/min

Distance $=$ speed $\times$ time$=2\times15=30$m

Distance between Salma's school and her house is 30m.

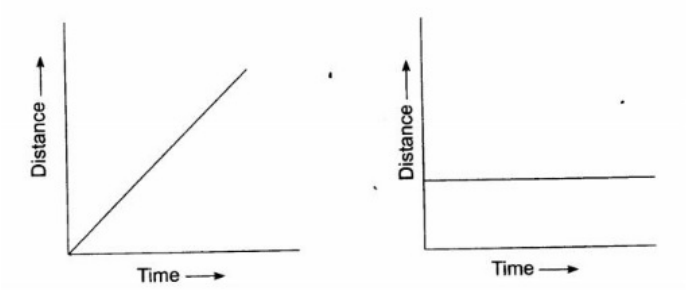
#637918

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.

Solution



#637919

Which of the following relations is correct ?

A Speed=Distance Time

B Speed=Distance /Time

C Speed− Time / Distance

D Speed= 1/Distance Time

#637920

The basic unit of speed is:

A km/min

B m/min

C km/h

D m/s

#637921

A car moves with a speed of 40km/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 :

A 100km

B 25km

C 15km

D 10km

Solution

Given data:

Speed,S1 is 40 km/hr

Speed,S2 is 60 km/hr

Time,T1 is 15 minutes-1/4 hr

Time,T2 is 15 minutes-1/4 hr

To find:

Total distance covered

Solution:

Using SI and $T1$ in the equation Speed=Distance $\times$ Time

$$D1 = (S1 \times T1)$$

$= 40 * 1/4$

$= 10$ kms

Using S2 and T2 in the equation Speed=Distance *Time

$D2 = S2 \times T2$

$= 60 \times \frac{1}{4}$

$= 15$ kms

Total kms covered $= D1 + D2 = 10 + 15 = 25$ kms.

#637922

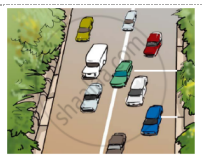


Figure 1 Vehicles moving in the same direction of on a road

Figure 2 Position of vehicles shown in Figure 1 after some time

Suppose the two photographs, shown in figures had been taken at an interval of 10 seconds. If a distance of 100 metres is shown by 1cm in these photographs, calculate the speed of the blue car.

Solution

From the figures , we conclude that the distance covered by blue car is 1 cm.

So, the distance covered $= 100m$

Time taken $= 10\ seconds$

Speed$= \frac{Distance}{Time} = \frac{200}{10} = 20m/s$

#637923

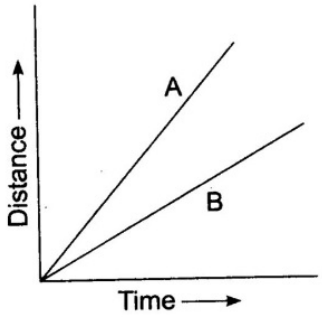


Figure shows the distance-time graph for the motion of two vehicles A and B. Which one of them is moving faster?

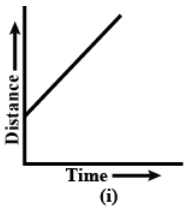
Solution

'A' is moving faster.

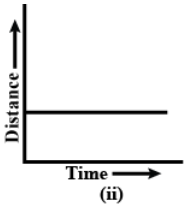
#637924

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

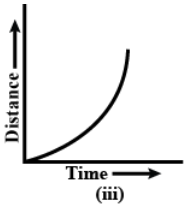
A



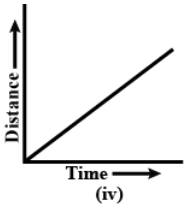
B



C



D



#637925

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 kilometers.

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

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

Solution

We know that,

(i) The basic unit of time is second, second is the SI unit of time.

(ii) Every object may or may not moves with a constant speed. Some are accelerating also.

(iii) The Distance between two cities are measured in kilometers. it is big unit of distance.

(iv) The time period of a given pendulum is always constant because it depends on the length of the pendulum.

(v) The speed of a train is measured in km/h and in m/s.

So, we can say that, (ii), (iv) and (v) are not correct statements.

Hence, This is the correct answer.