



PHYSICS

BOOKS - PRADEEP PHYSICS (HINGLISH)

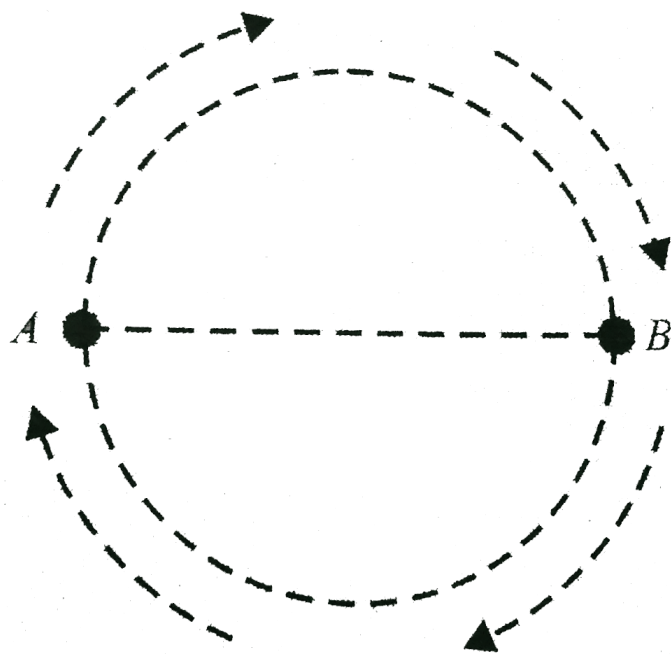
MOTION

Problem

1. A particle is moving in a circle of radius R .
 - a. What is its displacement when it covers (i)

half the circle, (ii) full circle?

b. What is its distance when it comes (i) half the the circle and (ii) full circle ?.



Watch Video Solution

2. Ravi told his friend that his house is 1km towards south from the main post office . Express the displacement and the distance moved by the friend from the post office , when he arrives at Ravi's house . Mention the reference point chosen by you.



Watch Video Solution

3. A particle moves 3m north , then 4m east and finally 6m south . Calculate the distance

travelled and the displacement.

A. 12 m, 7 m

B. 13 m, 5 m

C. 13 m, 13 m

D. None of these

Answer: B



Watch Video Solution

4. Suppose you walk across a room of length $9m$ with a velocity of one and a half kilometre per hour . Express this velocity in m/s and find the time you will take to move across the room.

A. 216s

B. 21.6s

C. 2.16s

D. 1.15s

Answer: B



Watch Video Solution

5. A car travels 30km at a uniform speed of $40\text{km}/\text{h}$ and the next 30km at a uniform speed of $20\text{km}/\text{h}$. Find its average speed.

A. 26.7 Km/h

B. 2.67 Km/h

C. 48.7 Km/h

D. 267 Km/h

Answer: A



Watch Video Solution

6. A train travels at $60\text{km}/h$ for $0.50h$, at $30\text{km}/h$ for the next $0.24h$ and at $70\text{km}/h$ for the next $0.71h$. What is the average speed of the train ?

A. 60 km/hr

B. 70 km/hr

C. 80 km/hr

D. 90 km/hr

Answer: A



Watch Video Solution

7. On a 120km track , a train travels the first 30km at a uniform speed of $30\text{km} / \text{h}$. How fast must the train travel the next 90km so as to average $60\text{km} / \text{h}$ for the entire trip?

A. 60 km/hr

B. 70 km/hr

C. 80 km/hr

D. 90 km /hr

Answer: D



Watch Video Solution

8. A scooter acquires a velocity of $36\text{km} / \text{h}$ in 10 *seconds* just after the start . It takes 20 seconds to stop . Calculate the acceleration in the two cases.



Watch Video Solution

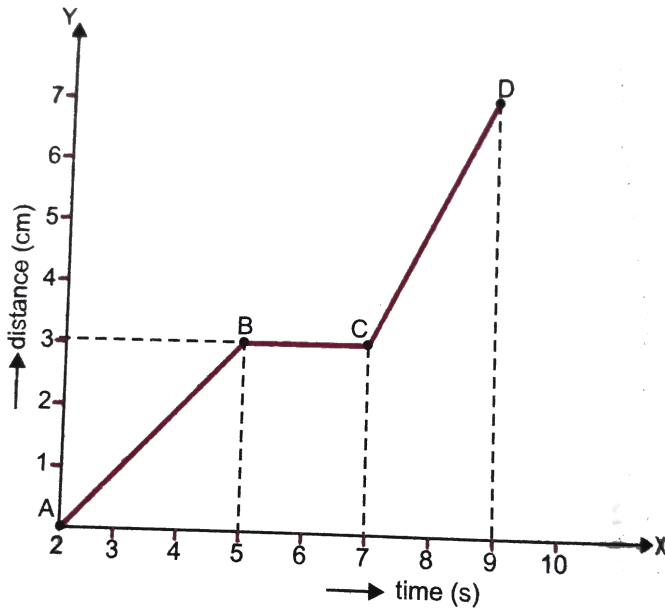
9. Figure is the distance - time graph of an object . Do you think it represents a real situation ? If so , why ? If not , why not?



[Watch Video Solution](#)

10. The graph in Figure shows the positions of a body at different times. Calculate the speed of the body as it moves from (i) A to B (ii) B

to C and (iii) C to D .



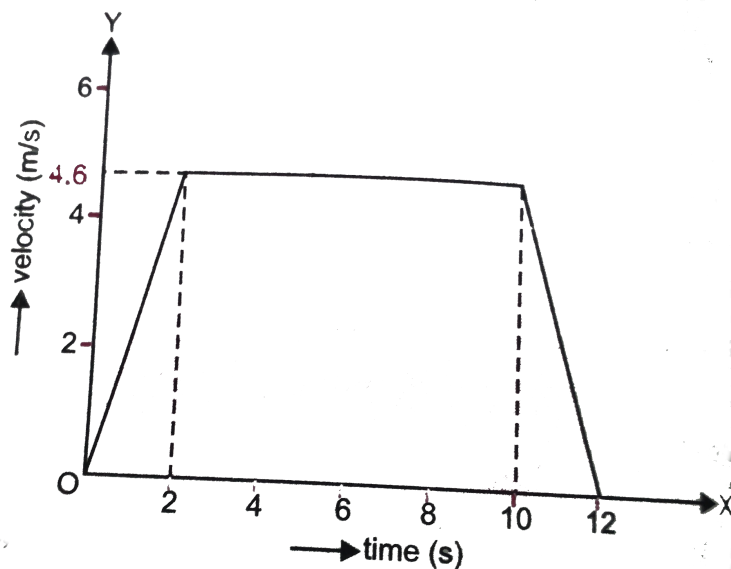
[Watch Video Solution](#)

11. The velocity - time graph of an ascending passenger order lift is given in figure. What is the acceleration of the lift:

(i) during the first two seconds ,

(ii) between 2nd and 10th second,

(iii) during the last two seconds. .



[Watch Video Solution](#)

12. A car increases its speed from 20km/h to 50km/h in 10 seconds. What is its acceleration?

A. 0.5 units

B. 0.83 units

C. 0.91 units

D. None of these

Answer: B



Watch Video Solution

13. A moving train is brought to rest within 20 seconds by applying brakes. Find the initial velocity, if the retardation due to brakes is 2 m/s^2 .

A. 40 m/s

B. 50 m/s

C. 60 m/s

D. 70 m/s

Answer: A



Watch Video Solution

14. An object undergoes an acceleration of $8m / s^2$ starting from rest. Find the distance travelled in 1 second.



Watch Video Solution

15. A body is accelerating at a constant rate of $10m / s^2$. If the body starts from rest , how much distance will it cover in 2 seconds ?



Watch Video Solution

16. A car acquires a velocity of $72\text{km}/\text{h}$ in 10 seconds starting from rest. Find (a) the acceleration (b) the average speed (c) the distance travelled in this time.



Watch Video Solution

17. A cyclist goes once round a circular track of diameter 105 metre in 5 minutes. Calculate his speed.



 [Watch Video Solution](#)

Ncert Questions

1. An object has moved through a distance. Can it have zero displacement ? If yes, support your answer with an example.



[Watch Video Solution](#)

2. A farmer moves along the boundary of a square field of side $10m$ in $40s$. What will be

the magnitude of displacement of the farmer
at the end of 2 minutes 20 seconds ?



[Watch Video Solution](#)

3. Which of the following is true for
displacement ?

(a) It cannot be zero.

(b) Its magnitude is greater than the distance
travelled by the object.



[Watch Video Solution](#)

4. Distinguish between speed and velocity.



Watch Video Solution

5. Under what conditions (s) is the magnitude of average velocity of an object equal to its average speed ?



Watch Video Solution

6. What does the odometer of an automobile measure ?



Watch Video Solution

7. What does the path of an object look like when it is in uniform motion ?



Watch Video Solution

8. During an experiment, a signal from a spaceship reached the ground station in five minutes. What was the distance of the spaceship from the ground station ? The signal travels at the speed of light, that is, $3 \times 10^8 \text{ m/s}$.



Watch Video Solution

9. When will you say a body is in (i) uniform acceleration ? (ii) non-uniform acceleration ?





[Watch Video Solution](#)

10. A bus decreases its speed from $80\text{km}/h$ to $60\text{km}/h$ in $5s$. Find the acceleration of the bus.



[Watch Video Solution](#)

11. A train starting from a railway station and moving with uniform acceleration attains a speed $40\text{km}/h$ in 10 minutes. Find its acceleration.



[Watch Video Solution](#)

12. What is the nature of the distance-time graphs for uniform and non-uniform motion of an object ?



[Watch Video Solution](#)

13. What can you say about the motion of an object whose distance-time graph is a straight line parallel to the time axis ?





[Watch Video Solution](#)

14. What can you say about the motion of an object whose distance-time graph is a straight line parallel to the time axis ?



[Watch Video Solution](#)

15. What is the quantity which is measured by the area occupied below the velocity-time graph ?



[Watch Video Solution](#)

16. A bus starting from rest moves with a uniform acceleration of $0.1m/s^2$ for 2 minutes. Find

(a) the speed acquired, (b) the distance travelled.



Watch Video Solution

17. A train is travelling at a speed of $90km/h$. Brakes are applied so as to produce a uniform

acceleration of $-0.5m/s^2$. Find how far the train will go before it is brought to rest.

A. 484 m

B. 250 m

C. 625 m

D. 400 m

Answer: C



Watch Video Solution

18. A trolley, while going down an inclined plane, has an acceleration of $2\text{cm} / \text{s}^2$ starting from rest. What will be its velocity 3s after the start ?



Watch Video Solution

19. A racing car has a uniform acceleration of $4\text{m} / \text{s}^2$. What distance will it cover in 10s after start ?

A. 200 m

B. 500 m

C. 900 m

D. 400 m

Answer: A



Watch Video Solution

20. A stone is thrown in a vertically upward direction with a velocity of $5m/s$. If the acceleration of the stone during its motion is $10m/s^2$ in the downward direction, what will

be the height attained by the stone and how much time will take to reach there ?

A. 2 m , 20 sec

B. 1.25 m , 0.5 sec

C. 12.5 m , 5 sec

D. 20 m, 2 sec

Answer: B



Watch Video Solution

1. An athlete complete one round of a circular track of diameter $200m$ in $40s$. What will be the distance covered and the displacement at the end of 2 minutes $20s$?



[Watch Video Solution](#)

2. Joseph jogs from one end A to other end B of a straight $300m$ road in 2 minutes 30 seconds and then turns around and jogs $100m$ back to point C in another 1 minute.

What are Joseph's average speeds and velocities in jogging (a) from A to B and (b) from A to C ?



[Watch Video Solution](#)

3. Abdul while driving to school, computes the average speed for his trip to be 20kmh^{-1} . On his return trip along the same route, there is less traffic and the average speed is 40kmh^{-1} . What is the average speed for Abdul's trip ?



[Watch Video Solution](#)

4. A motorboat starting from rest on a lake accelerates in a straight line at a constant rate of 3.0 m/s^2 for 8.0 s . How far does the boat travel during this time ?



[Watch Video Solution](#)

5. a driver of a car travelling at 52 km/h applies the brakes and decelerates uniformly in the opposite direction. The car stops in 5 s . Another driver going at 34 km/h in another

car applies his brakes slowly and stops in 10s.

On the same graph paper, plot the speed versus time graphs for the two cars. Which of the two cars travelled farther after the brakes were applied ?



[Watch Video Solution](#)

6. Figure shows the distance-time graph of three object A , B and C . Study the graph and answer the following questions :

(a) Which of the three is travelling the fastest

?

(b) Are all three ever at the same point on the road ?

(c) How far has C travelled by when B passes A ?

(d) How far has B travelled by the time it passes C ?



[Watch Video Solution](#)

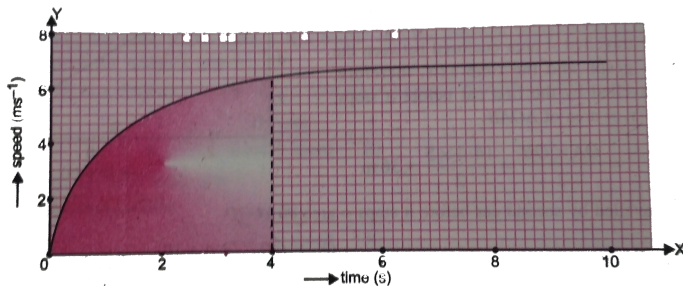
7. A ball is gently dropped from a height of $20m$. If its velocity increases uniformly at the

rate of $10\text{m} / \text{s}^2$, with what velocity will it strike the ground ? After what time will it strike the ground ?



Watch Video Solution

8. The speed-time graph for a car is shown in Figure



(a) Find how far does the car travel in the first

4 seconds. Shade the area on the graph that represents the distance travelled by the car during this period.

(b) Which part of the graph represents uniform motion of the car ?



[Watch Video Solution](#)

9. state which of the following situations are possible and give an example for each of these :

(a) a body with a constant acceleration but

with zero velocity.

(b) an object moving in a certain direction with an acceleration in the perpendicular direction.



[Watch Video Solution](#)

10. An artificial satellite is moving in a circular orbit of radius 42250km . Calculate its speed if it takes 24hours to revolve around the Earth.



[Watch Video Solution](#)

Ncert Short Answer Question

1. An object has moved through a distance.

Can it have zero displacement ? If yes, support your answer with an example.



[Watch Video Solution](#)

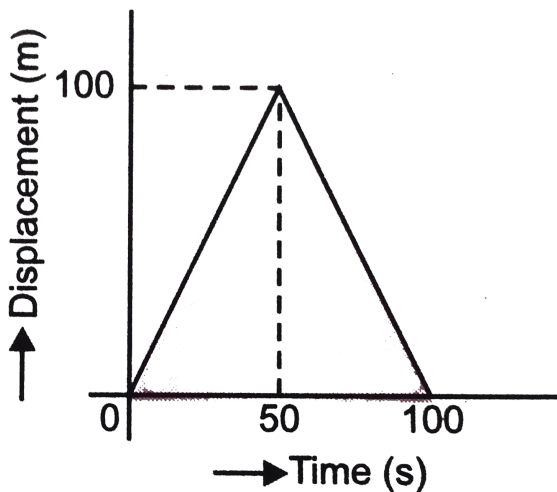
2. How will the equations of motion for an object moving with a uniform velocity change

?



[Watch Video Solution](#)

3. A girl walks along a straight path to drop a letter in the letterbox and comes back to her initial position. Her displacement-time graph is shown in Figure. Plot a velocity-time graph for the same.



Watch Video Solution

4. A car starts from rest and moves along the x-axis with constant acceleration 5ms^{-2} for 8 seconds. If it then continues with constant velocity, what distance will the car cover in 12 seconds since it started from the rest ?



[Watch Video Solution](#)

5. A motorcyclist drives from A to B with a uniform speed of 30kmh^{-1} and returns back

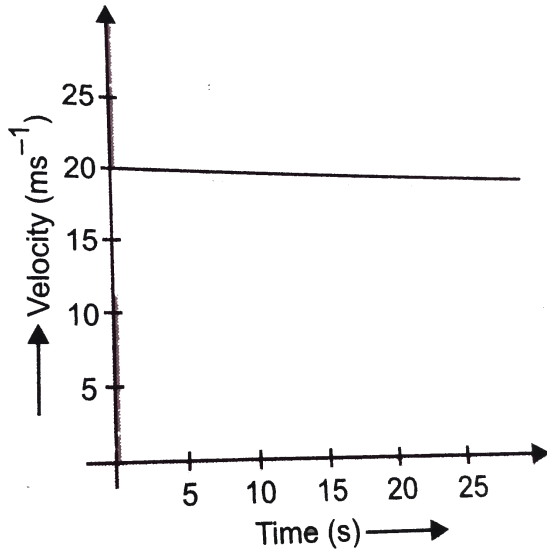
with a speed of 20kmh^{-1} . Find its average speed.



[Watch Video Solution](#)

6. The velocity-time graph shows the motion of a cyclist. Find (i) its acceleration (ii) its velocity and (iii) the distance covered by the cyclist in

15 seconds.



[Watch Video Solution](#)

7. A ball is thrown vertically upwards. Which of the following plots represent the speed graph

of the ball during its flight if the air resistance is not ignored?



[Watch Video Solution](#)

Long Answer Question

1. An object is dropped from rest at a height of $150m$ and simultaneously another object is dropped from rest at a height $100m$. What is the difference in their height after $2s$ if both

the objects drop with same acceleration ? How does the difference in height vary with time ?



[Watch Video Solution](#)

2. An object starting from rest travels $20m$ in first $2s$ and $160m$ in next $4s$. What will be the velocity after $7s$ from the start.



[Watch Video Solution](#)

3. An electron moving with a velocity of $5 \times 10^4 \text{ m s}^{-1}$ enters into a uniform electric field and acquires a uniform acceleration of 10^4 m s^{-2} in the direction of its initial motion.

(i) Calculate the time in which the electron would acquire a velocity double of its initial velocity.

(ii) How much distance the electron would cover in this time ?



[Watch Video Solution](#)

4. Obtain a relation for the distance travelled by an object moving with a uniform acceleration in the interval between 4th and 5th seconds.



[Watch Video Solution](#)

5. Two stones are thrown vertically upwards simultaneously with their initial velocities u_1 and u_2 respectively. Prove that the heights reached by them would be in the ratio of

$u_1^2 : u_2^2$ (Assume upward acceleration is $-g$ and downward acceleration to be $+g$).



Watch Video Solution

6. What is the nature of the distance-time graphs for uniform and non-uniform motion of an object ?



Watch Video Solution

7. Draw speed-time graph for a body (i) at rest (ii) in uniform motion (iii) in non-uniformly accelerated motion. Discuss the results briefly.



[Watch Video Solution](#)

8. Write the three equations of uniformly acceleration motion. Give the meaning of each symbol in them.



[Watch Video Solution](#)

9. Using graphical method, derive the equations

$$v = u + at \text{ and } s = ut + \frac{1}{2}at^2$$

where symbols have their usual meanings.



[Watch Video Solution](#)

10. Derive graphically the equation of motion for position-velocity relation of a body moving with uniform acceleration.



[Watch Video Solution](#)

11. Explain what is meant by uniform circular motion. Give at least three examples.



Watch Video Solution

12. State velocity-time relation in uniformly accelerated motion. Use graphical method to obtain this relation.



Watch Video Solution

1. Is displacement a scalar quantity ?



[Watch Video Solution](#)

2. What is the SI unit of displacement ?



[Watch Video Solution](#)

3. Is distance a vector quantity ?



[Watch Video Solution](#)

4. Can distance be negative ?



[Watch Video Solution](#)

5. Can displacement be negative ?



[Watch Video Solution](#)

6. An object has moved through a distance.

Can it have zero displacement ? If yes, support

your answer with an example.



Watch Video Solution

7. Can distance be zero, even when displacement is not zero ?



Watch Video Solution

8. Can displacement and distance ever be equal ?



Watch Video Solution

9. What is SI unit of speed ? Is it same for velocity ?



Watch Video Solution

10. What is the acceleration of a body moving with uniform velocity ?



Watch Video Solution

11. Name the quantity that represents rate of change of displacement.



Watch Video Solution

12. Name the quantity that represents rate of change of velocity ?



Watch Video Solution

13. The unit of acceleration in the SI system is



[Watch Video Solution](#)

14. In addition to speed, what else should be known to predict the position of a moving body from a given starting point ?



[Watch Video Solution](#)

15. What does the slope of a speed-time graph indicate ?



[Watch Video Solution](#)

16. Earth revolves around the Sun in a circular orbit with a uniform speed. Is this motion uniform or accelerated ?



Watch Video Solution

17. Is the motion of Moon around Earth uniform or acceleration ?



Watch Video Solution

18. An artificial satellite revolves around the Earth with a constant velocity. It's the statement true ?



Watch Video Solution

19. What remains constant in uniform circular motion ?



Watch Video Solution

20. What changes continuously in uniform circular motion ?



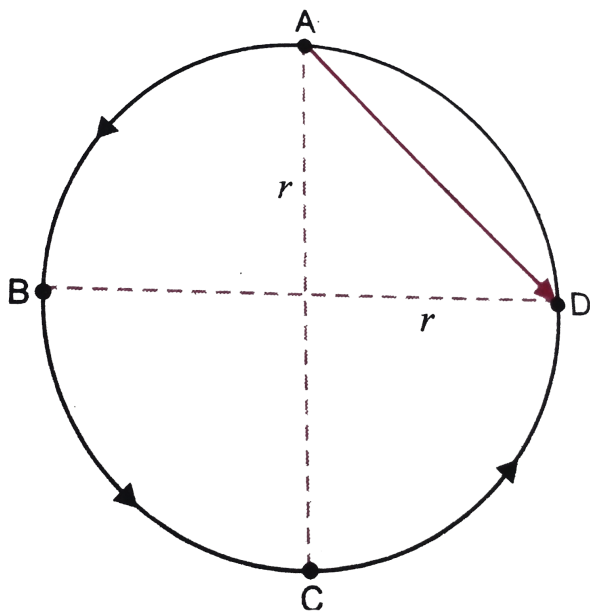
Watch Video Solution

21. What type of motion is the motion of tip of second's hand of a watch ? Is it uniform or accelerated ?



Watch Video Solution

22. A particle moves over three quarters of a circle of radius r . What is the magnitude of its displacement ?



[Watch Video Solution](#)

23. A body starts from rest. What is zero ?



Watch Video Solution

24. A body stops after some time. What is zero ?



Watch Video Solution

25. A body falls freely. What is constant ?



Watch Video Solution

Short Answer Questions

1. A particle moves in a circle of radius R . In half the period of revolution its displacement is and distance covered is



[Watch Video Solution](#)

2. What is locomotion ?



[Watch Video Solution](#)

3. What are the values of distance travelled and displacement in covering $10m$ from P to Q and coming back ?



[Watch Video Solution](#)

4. Convert a speed of $36km/h$ into m/s .



[Watch Video Solution](#)

5. Convert a speed of 15 m / s into km / h .



[Watch Video Solution](#)

6. Name the terms represented by various symbols in the equation, $v = u + at$.



[Watch Video Solution](#)

7. What can you say about the motion of a body if

(a) its displacement-time graph is a straight line, with some slope.

(b) its velocity-time graph is a straight line, with some slope ?



[Watch Video Solution](#)

8. What conclusion do you draw when displacement-time graph of a body is as shown in figure ?



[Watch Video Solution](#)

9. What conclusion do you draw when displacement-time graph of a body is as shown in Figure ?



[Watch Video Solution](#)

10. If velocity-time graph of a body is as shown in figure, what is the nature of motion ?



[Watch Video Solution](#)

11. What can you calculate from speed-time graph of a body ?



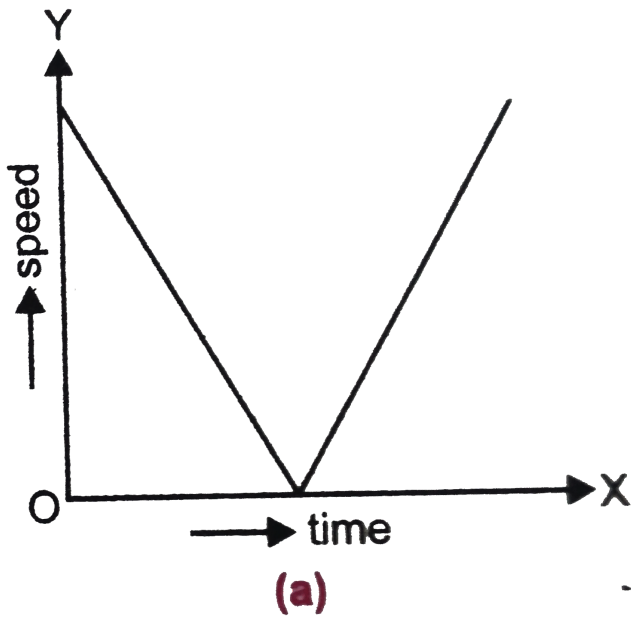
Watch Video Solution

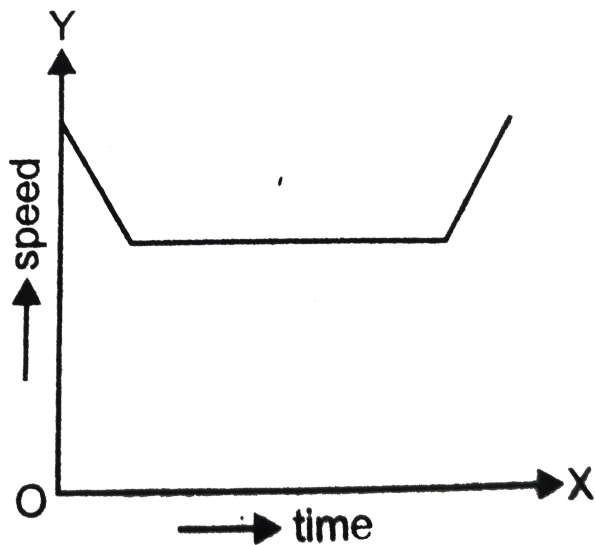
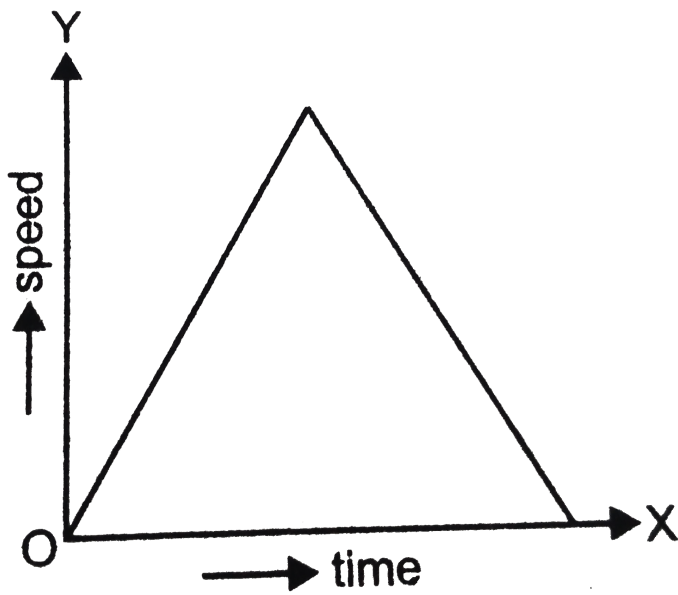
12. Name the two quantities, the slope of whose graphs gives (i) speed (ii) acceleration.



Watch Video Solution

13. Three speed-time graphs are shown below.





(c)

(i) A ball thrown vertically upwards and

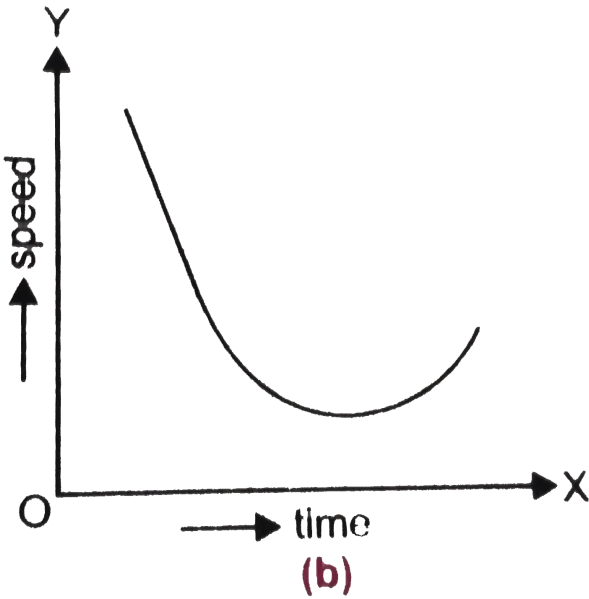
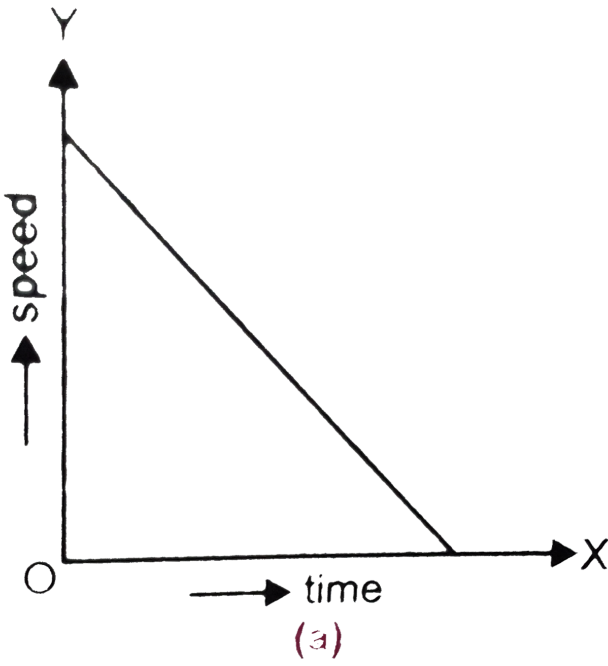
returning to the hand of the thrower ?

(ii) A body decelerating to a constant speed and accelerating.



[Watch Video Solution](#)

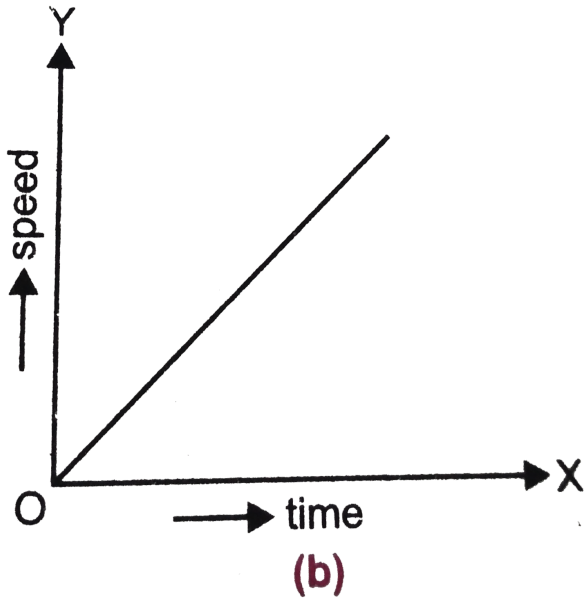
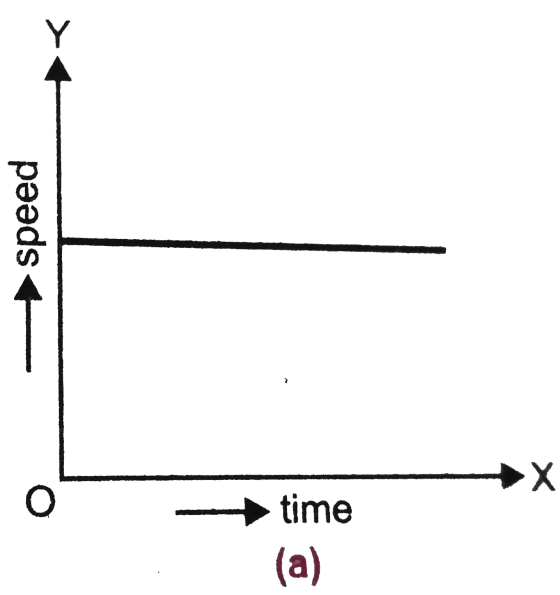
14. What do the graph shown in Figure indicate ?





[Watch Video Solution](#)

15. What is represented by the graph in Figure ?



 [Watch Video Solution](#)

Short Answer Questions

1. Define distance and displacement. Give at least four points of distinction between them.



[Watch Video Solution](#)

2. Define the term uniform acceleration. Give one example of uniformly accelerated motion.



[Watch Video Solution](#)

3. Define the speed and velocity. What are their SI units ?



Watch Video Solution

4. Explain the terms : uniform motion and non-uniform motion with examples.



Watch Video Solution

5. Derive graphically the relation $v = u + at$

,where the symbols have their usual meaning.



Watch Video Solution

6. Using velocity time graph, establish the

relation $s = ut + \frac{1}{2}at^2$, where the symbols

have their usual meanings.



Watch Video Solution

7. Use graphical method to derive the relation $v^2 - u^2 = 2as$, where the symbols have their usual meanings.



[Watch Video Solution](#)

8. Uniform circular motion is an acceleration motion. Comment.



[Watch Video Solution](#)

9. A stone of mass m tied to a string of length l is rotated in a circle with the other end of the string as the centre. The speed of the stone is v . If the string breaks, the stone will move



[Watch Video Solution](#)

Higher Order Thinking Skills

1. A body covered a distance of l metre along a semicircular path. Calculate the magnitude of

displacement of the body, and the ratio of distance to displacement.



[Watch Video Solution](#)

2. The displacement time graph for two particles A and B are straight lines inclined at 30° with time axis and at 30° to displacement axis respectively. Calculate ratio of velocities of the two particles.



[Watch Video Solution](#)

3. When two bodies move uniformly towards each other, the distance between them decreases by $8m/s$. If both the bodies move in the same direction with the same speeds, the distance between them increases by 4 metre per second. What are the speeds of two bodies ?



[Watch Video Solution](#)

4. Two particles are moving with constant speed v such that they are always at a

constant distance d apart and their velocities are always equal and opposite. After what time will they return to their initial positions ?



[Watch Video Solution](#)

5. A cyclist moving on a circular track of radius $50m$ completes one revolution in 4 minutes. What is the (i) average speed (ii) average velocity in one full revolution ?



[Watch Video Solution](#)

6. A person goes to market, makes purchases and comes back at a constant slower speed. Draw displacement-time and velocity time graphs of the person.



[Watch Video Solution](#)

Value Based Question

1. Rohan and his sister Saniya go to school together in their car. Rohan drives much faster than Saniya. Saniya tells Rohan not to take the

risk of over speeding. She tells him that time taken to reach the school would depend upon average speed. By overspeeding for a little while, the risk involved is much greater compared to the little time saved.

Answer the following questions based on the above paragraph.

- (i) Which values are displayed by Saniya ?
- (ii) Is Saniya right in her statement ?
- (iii) How do you define average speed ?



Watch Video Solution

2. Puja and Neha are close friends. Puja is a science graduate and Neha is a commerce graduate. Puja finds that while driving on a clear highway, Neha often exceeds the speed limit and argues that there is no harm in doing so when the road is clear. Puja does not agree with her and tells her that with increase in speed, stopping distance of car would increase and she would not be able to manage things if some stray cattle etc. appears suddenly on the way.

Read the above passage and answer the following question :

(i) Is Puja right in her statement ?

(ii) What values are displayed by Puja in her statement ?

(iii) How is stopping distance related to speed of vehicle ?



[Watch Video Solution](#)

3. A Physics teacher explains the concept of relative velocity to her students in class. She emphasises that when two bodies are moving in opposite directions, their relative velocity is

sum of the velocities of the two. And when two bodies are moving in the same direction, their relative velocity is difference of the velocities of the two. Students are confused. The teacher then takes two balls one red and the other green. She says suppose red ball moves with a velocity $5m/s$ and green ball moves with a velocity of $4m/s$ from a common point, and along the same straight line. if red ball is moving to the right and green ball is moving to the left, then after 1 sec, red ball is at R' , where $RR' = 5m$ and green ball is at G' where $GG' = 4m$, Figure. The distance

between the two balls after

$$1 \text{ sec} = G'R'GG' + RR' = (4 + 5) = 9m.$$

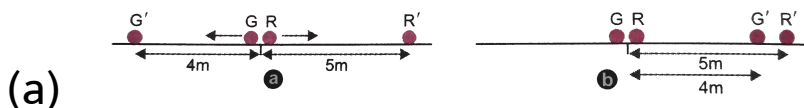
This is the magnitude of their relative velocity.

If both the balls are moving to the right, as shown in Figure. The distance between the

two balls after

$$\text{sec} = G'R' - GG' = 5 - 4 = 1m.$$

In that case, relative velocity = $1m/s$.



Read the above passage and answer the following questions :

(i) What value has the Physics teacher

displayed ?

(ii) What have the students picked up ?

(iii) Give atleast one practical example of the concept.



[Watch Video Solution](#)

4. A Physics teacher is explaining the difference between average speed and average velocity to her students.

Where average velocity = $\frac{\text{displacement}}{\text{time taken}}$,

average speed = $\frac{\text{actual distance travelled}}{\text{time taken}}$

She emphasises that average speed is more relevant than average velocity, because displacement from one place to other is only theoretical, being the shortest distance between two places. Average speed is the real entity that matters, taking into account the actual time taken to travel the actual distance between the two stations.

Read the above passage and answer the following question :

(i) Do you agree with the statement of Physics teacher ?

(ii) The shortest distance between Ambala to

Delhi is 200km . A train takes 4hrs and covers a distance of 210km in going from Ambala to Delhi via Karnal. Another train takes 5hrs and covers 250km distance in going from Ambala to Delhi via Saharanpur. What is the average speed of these two trains? What would be the average velocity of a train that takes 2.5hrs to cover 200km distance ?

(iii) What values do you learn from this discussion ?



Watch Video Solution

Problem For Practice

1. A body thrown vertically upwards reaches a maximum height h . It then returns to ground . Calculate the distance travelled and the displacement .



[Watch Video Solution](#)

2. A body travels a distance of $15m$ from A to B and then moves a distance of $20m$ at right

angles to AB . Calculate the total distance travelled and the displacement.



[Watch Video Solution](#)

3. A particle is moving in a circle of diameter $5m$. Calculate the distance covered and the displacement when it completes 3 revolutions.



[Watch Video Solution](#)

4. In a long distance race, the athletes were expected to take four rounds of the track such that the line of finish was same as the line of start . Suppose the length of the track was $200m$.

(a) What is the total distance to be covered by the athletes ?

(b) What is the displacement of the athletes when they touch the finish line?

(c) Is the motion of the athletes uniform or non -uniform?

(d) Is the displacement of an athlete and the

distance moved by him at the end of the race equal?



[Watch Video Solution](#)

5. An object travels $16m$ in $4s$ and then another $16m$ in $2s$. What is the average speed of the object?



[Watch Video Solution](#)

6. The odometer of a car reads 2000km at the start of a trip and 2400km at the end of the trip . If the trip took 8h , calculate the average speed of the car in km / h and m / s .



[Watch Video Solution](#)

7. Usha swims in a 90m long pool. She covers 180m in one minute by swimming from one end to the other and back along the same

length path. Find the average speed and average speed and average velocity of Usha.



[Watch Video Solution](#)

8. Starting from a stationary position , Rahul paddles his bicycle to attain a velocity of $6m / s$ in $30s$. Then he applies brakes such that the velocity of bicycle comes down to $4m / s$ in the next $5s$. Calculate the acceleration of the bicycle in both the cases.



[Watch Video Solution](#)

9. Ahmed is moving with a velocity of $120\text{km} / \text{h}$. How much distance will he cover (a) in one minute and (b) in one second ?



[Watch Video Solution](#)

10. An electric train is moving with a velocity of $120\text{km} / \text{h}$. How much distance will it move in 30s ?



[Watch Video Solution](#)

11. A body is moving with a velocity of $15\text{m} / \text{s}$.

If the motion is uniform , what will be the velocity after 10s ?



[Watch Video Solution](#)

12. A train travels some distance with a speed of $30\text{km} / \text{h}$ and returns with a speed of $45\text{km} / \text{h}$. Calculate the average speed of the train.



[Watch Video Solution](#)

13. A train $100m$ long moving on a straight level track passes a pole in $5s$. Find (a) the speed of the train (b) the time it will take to cross a bridge $500m$ long.



Watch Video Solution

14. A car travels along a straight line for first half time with speed $40km/h$ and the second half time with speed $60km/h$. Find the average speed of the car.

A. 45 kmph

B. 50 kmph

C. 52.5 kmph

D. 55 kmph

Answer: B



Watch Video Solution

15. A body starts rolling over a horizontal surface with an initial velocity of $0.5m/s$. Due to friction, its velocity decreases at the rate of

$0.05m / s^2$. How much time will it take for the body to stop?



[Watch Video Solution](#)

16. A car travelling at $36km / h$ speeds upto $72km / h$ in 5 seconds. What is its acceleration ? If the same car stops in 20 seconds , what is the acceleration?



[Watch Video Solution](#)

17. The following is the distance - time table of a moving car.

(a) Use a graph paper to plot the distance travelled by the car versus the time .

(b) What was the car travelling at the greatest speed?

(c) What is the average speed of the car ?

(d) What is the speed between 11.25*am* and 11.40*am*?

(e) During a part of the journey , the car was forced to slow down to 12*km / h*. At what

distance did his happen?

Time	Distance
10.05am	0km
10.25am	5km
10.40am	12km
10.50am	22km
11.00am	26km
11.10am	28km
11.25am	38km
11.40am	42km



[View Text Solution](#)

18. A body is moving uniformly with a velocity of $5m/s$. Find graphically the distance travelled by it in $5s$.



Watch Video Solution

19. Study the speed time graph of a body shown in Figure. and answer the following questions:

(a) What type of motion is represented by OA ?

(b) What type of motion is represented by AB ?

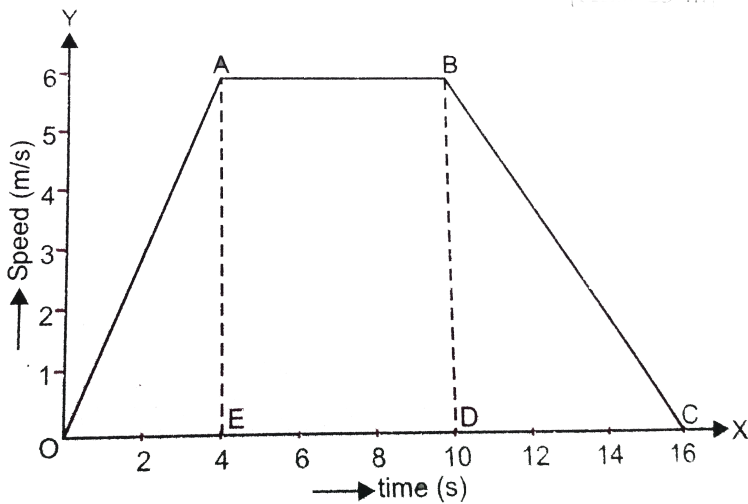
(c) What type of motion is represented by BC ?

(d) Find out acceleration of the body.

(e) Find out retardation of the body .

(f) Find out the distance travelled by the body

from A to B



[Watch Video Solution](#)

20. In the above question , calculate

(i) distance travelled from O to A .

(ii) distance travelled from B to C .

(iii) total distance travelled by the body in 16 sec.



[Watch Video Solution](#)

21. A ship is moving at a speed of $56\text{km} / \text{h}$.

One second later , it is moving at $58\text{km} / \text{h}$.

What is its acceleration?



[Watch Video Solution](#)

22. A scooter acquires a velocity of $36\text{km} / \text{h}$ in 10 seconds just after the start . Calculate the acceleration of the scooter.



Watch Video Solution

23. A racing car has a uniform acceleration of $4\text{m} / \text{s}^2$. What distance will it cover in 10s after start ?



Watch Video Solution

24. A body starts rolling over a horizontal surface with an initial velocity of $0.5m/s$. Due to friction, its velocity decreases at the rate of $0.05m/s^2$. How much time will it take for the body to stop?



Watch Video Solution

25. A train starting from rest moves with a uniform acceleration of $0.2m/s^2$ for 5 minutes. Calculate the speed acquired and the distance travelled in this time.



[Watch Video Solution](#)

26. A bus was moving with a speed of $54\text{km} / \text{h}$. On applying brakes, it stopped in 8 seconds. Calculate the acceleration and the distance travelled before stopping.



[Watch Video Solution](#)

27. A motor cycle moving with a speed of $5\text{m} / \text{s}$ is subjected to an acceleration of

$0.2m/s^2$. Calculate the speed of the motor cycle after 10 second, and the distance travelled in this time.



[Watch Video Solution](#)

28. The brakes applied to a car produce an acceleration of $6m/s^2$ in the opposite direction to the motion . If the car takes $2s$ to stop after the application of brakes , calculate the distance it travels during this time.



[Watch Video Solution](#)

29. A train starting from rest attains a velocity of $72\text{km}/\text{h}$ in 5 minutes . Assuming that the acceleration is uniform , find (i) the acceleration and (ii) the distance travelled by the train for attaining this velocity .



Watch Video Solution

30. A car accelerates uniformly from $18\text{km}/\text{h}$ to $36\text{km}/\text{h}$ in 5 second. Calculate (i) the

acceleration and (ii) the distance covered by the car in that time .



Watch Video Solution

31. Calculate the speed of the tip of second's hand of a watch of length 1.5cm .

A. $0.16\text{cm} / \text{s}$

B. $0.12\text{cm} / \text{s}$

C. 1 cm/s

D. None

Answer: A



Watch Video Solution

32. The length of minutes hand of a clock is 5cm . Calculate its speed.

A. $7.8 \times 10^{-3}\text{cm} / \text{s}$

B. $7 \times 10^{-3}\text{cm} / \text{s}$

C. $8.7 \times 10^{-3}\text{cm} / \text{s}$

D. None

Answer: C



Watch Video Solution

Oral Testing

1. Can distance be zero, even when displacement is not zero ?



Watch Video Solution

2. What are the units of distance and displacement ?



Watch Video Solution

3. How is speed of a body related to its velocity?



Watch Video Solution

4. What is the general formula for acceleration ?



[Watch Video Solution](#)

5. An object travels $10m$ in first 2 seconds and another $10m$ in next 3 seconds. What is its average speed?



[Watch Video Solution](#)

6. Out of distance and displacement , which one is scalar and which one is vector ?



[Watch Video Solution](#)

7. An object has moved through a distance. Can it have zero displacement ? If yes, support your answer with an example.



[Watch Video Solution](#)

8. A body is moving uniformly along a circle . Is it true ?



[Watch Video Solution](#)

9. Acceleration is a scalar . Do you agree ?



[Watch Video Solution](#)

10. Which is the correct unit of acceleration ?

$km / h, m - s, km / h^2$



[Watch Video Solution](#)

11. The acceleration of a body is zero, what is the nature of its distance-time graph ?



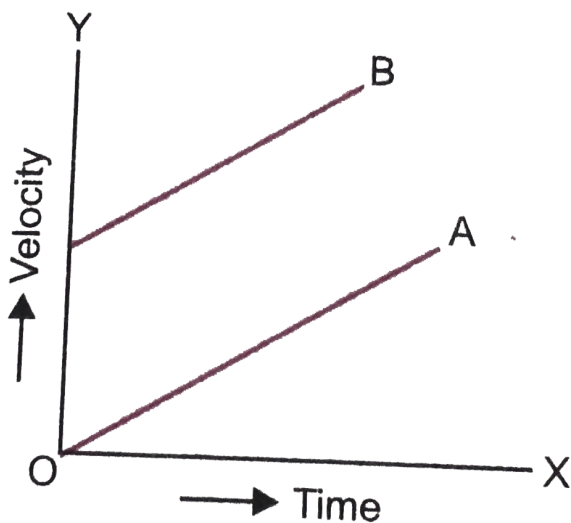
[Watch Video Solution](#)

12. The velocity time graph of a body is a straight line parallel to the time axis. Is the body at rest ?



[Watch Video Solution](#)

13. From velocity time graph of bodies A and B , what do you infer about their initial velocities ?



[Watch Video Solution](#)

14. What is the quantity which is measured by the area occupied below the velocity-time graph ?



Watch Video Solution

15. How do you obtain speed of a body from its distance time graph ?



Watch Video Solution

16. The distance time graph of a body is a straight line making an angle of 30° with time axis.

What is speed ?



Watch Video Solution

17. The velocity time graph of a body is a straight line parallel to the time axis. Is the body at rest ?



Watch Video Solution

18. The slope of velocity time graph for body B is more than that for body A. Which body has smaller acceleration ?



Watch Video Solution

19. What type of motion is the motion of tip of second's hand of a watch ? Is it uniform or accelerated ?



Watch Video Solution

Quiz Testing

1. (a) Can distance travelled by an object in motion be negative?

(b) Can displacement of an object in motion be zero or negative ?



Watch Video Solution

2. (a) Between two given positions , which is fixed : distance or displacement?

(b) Between two given positions , which may be smaller : distance or displacement?



[Watch Video Solution](#)

3. (a) An object completes one and a half revolution in a circle of radius r . What is the distance travelled?

(b) In the above case , what is the displacement?



[Watch Video Solution](#)

4. (a) Out of speed and velocity , which one is scalar and which one is vector?

(b) Units of speed and velocity are different . Is it true?



[Watch Video Solution](#)

5. (a) Which of the following is not a unit of velocity ms^{-1} , cms^{-1} , kmh^{-2} , kmh^{-1} ?

(b) Which of the following is unit of acceleration $cm^{-1}s$, $cm^{-2}s$, kmh^{-2} , kmh^{-1} ?



[Watch Video Solution](#)

6. (a) A car travels first 30km at a uniform speed of $20\text{km}/\text{h}$ and next 30km at a uniform speed of $40\text{km}/\text{h}$. What is its average speed ?
- (b) A scooter acquires a speed of $36\text{km}/\text{h}$ in 10s . What is its acceleration?



[Watch Video Solution](#)

7. (a) The distance time graph of a body is parallel to the time axis. What does it indicate ?

(b) The distance time graph of a body coincide with time axis. What does it indicate ?



[Watch Video Solution](#)

8. (a) A body starting from rest moves with a constant acceleration of $5m/s^2$. What is velocity of the body after 10 sec ?

(b) A scooter moving with a velocity of 18km/h is brought to rest in 5s by applying brakes. What is the acceleration produced ?

- A. 50 m/s , -1 units
- B. 25 m/s , 0.9 units
- C. 50 m/s , 0.1 units
- D. None of these

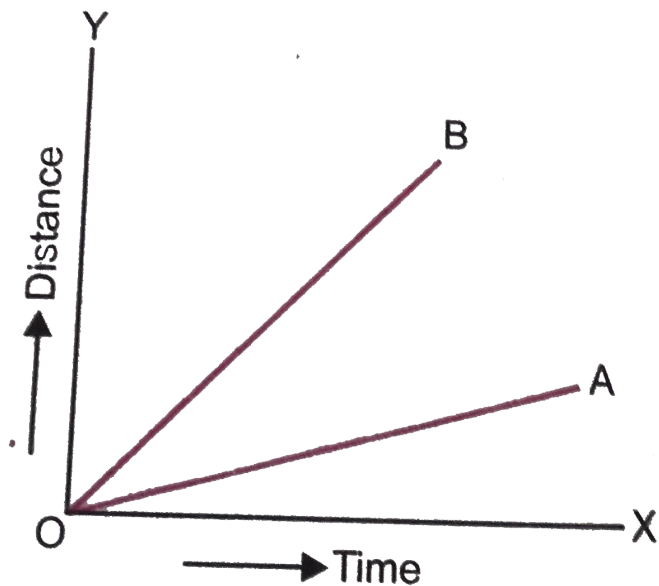
Answer: A



Watch Video Solution

9. (a) The distance time graph of bodies A and B are shown in Figure. Which body is moving faster than the other ?

(b) Both, A and B do not start moving from the origin. Is it correct ?

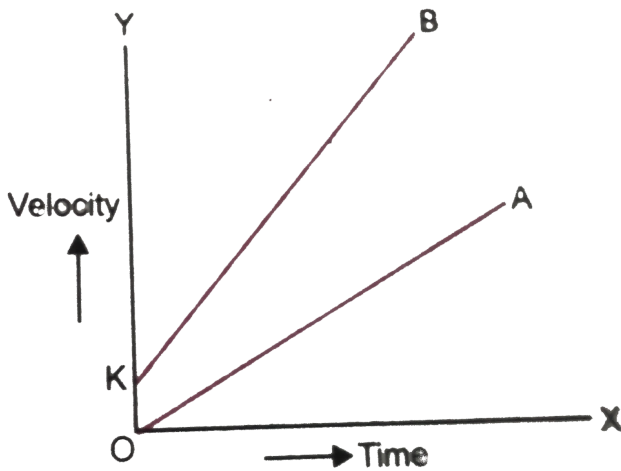
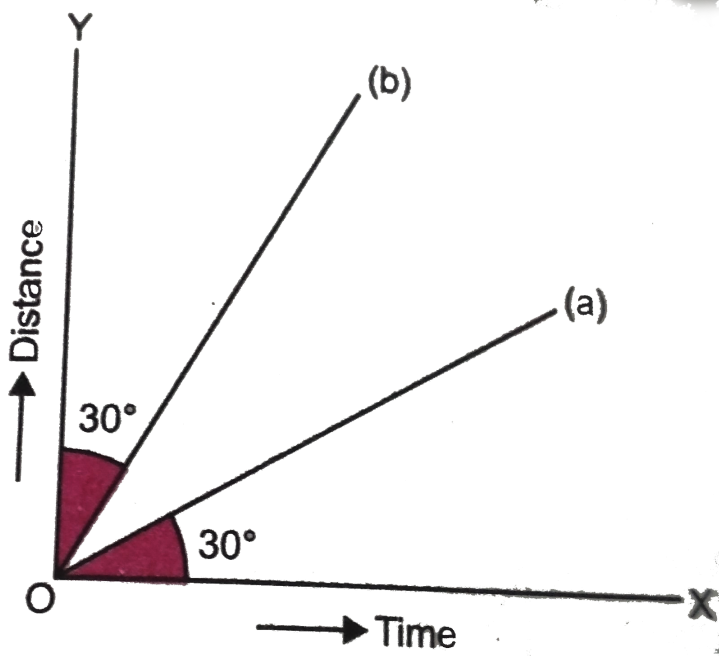


[Watch Video Solution](#)

10. (a) The distance time graph of a body makes an angle of 30° with time axis, Figure.

What is its velocity ?

(b) If the same makes an angle of 30° with distance axis, Figure, what is the velocity of the body ?



 [Watch Video Solution](#)

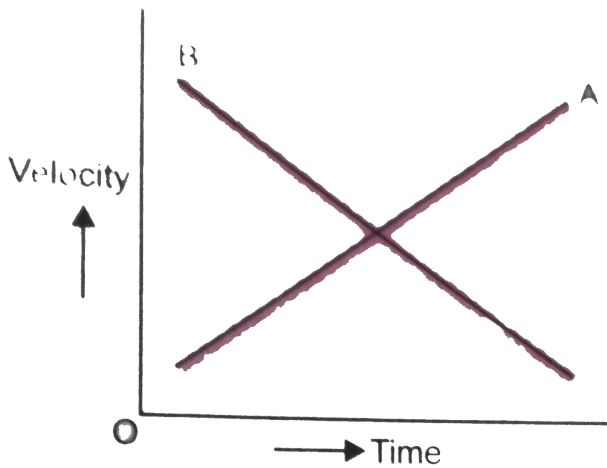
11. (a) Look at the velocity time graph of two bodies A and B , Figure. which body starts from rest and which body has some initial velocity ?

(b) From Figure, which body is having greater acceleration ?



[Watch Video Solution](#)

12. (a) The velocity time graph of two bodies are shown in Figure. Slope of the graph for body A is positive. What does it signify ?



(b) The slope of velocity time graph of body B is negative. What does it represent ?

 [Watch Video Solution](#)

Worksheet Testing Fill In The Blanks

1. Can an object be at rest as well as in motion at the same time ? Explain eith illustration.



Watch Video Solution

2. Between initial position and final position , displacement is but distance



Watch Video Solution

3. A train travels 10km in every hour , yet its speed may not be uniform because



[Watch Video Solution](#)

4. The velocity of a body may be variable even when it travels equal distances in equal intervals of time , howsoever small , if



[Watch Video Solution](#)

5. A body, freely falling under gravity will have uniform



[Watch Video Solution](#)

Worksheet Testing

1. A bus decreases its speed from $72\text{km}/\text{h}$ to $54\text{km}/\text{h}$ in 10s . Calculate the acceleration of the bus.



[Watch Video Solution](#)

2. A train is travelling at a speed of $108\text{km} / \text{h}$.

How much distance is it travelling every second ?



[Watch Video Solution](#)

3. The average speed of a person in driving to school is $30\text{km} / \text{h}$. On the return trip along the same route, the average speed is $25\text{km} / \text{h}$.

What is the average speed for the round trip to the school ?



[Watch Video Solution](#)

4. Alka jogs from one end A to the other end B of a straight $250m$ road in 1 minute and 4 seconds. Then turns around and jogs $50m$ back to point C in 30 seconds. Calculate average speed and average velocity in jogging from (i) A to B and (ii) A to C .



[Watch Video Solution](#)

5. A train starting from rest moves with a uniform acceleration of $0.2m/s^2$ for 5 minutes . Calculate the speed acquired and the distance travelled in this time.

A. 60 m/s , 1000 m

B. 40 m/s , 2000 m

C. 60 m/s , 9000 m

D. NONE

Answer: C



Watch Video Solution

6. A train running at 108 km/h is brought to a halt in 2 minutes. Calculate the retardation produced by the application of brakes. Also, calculate the distance the train travels before stopping.

A. $-0.25 \frac{\text{m}}{\text{s}^2}$, 1800 m

B. $-0.5 \frac{\text{m}}{\text{s}^2}$, 1000 m

C. $-1.25 \frac{\text{m}}{\text{s}^2}$, 100 m

D. NONE

Answer: A



Watch Video Solution

7. A ball thrown vertically upwards returns to the thrower in 20 second. Calculate the velocity with which it was thrown and the maximum height attained by the ball. Take $g = 10m / s^2$.

A. 100 m/s, 200 m

B. 10 m/s, 500 m

C. 100 m/s, 500 m

D. None

Answer: C



Watch Video Solution

8. Calculate the speed of tip of minutes hand of a clock, whose length is 7cm .



Watch Video Solution

9. A stone of mass $50g$ is being rotated in a circle of radius $50cm$ with a uniform speed of $2m/s$. What is the acceleration of the stone ?

A. 10 units

B. 9 Units

C. 12 units

D. 8 Units

Answer: D



Watch Video Solution

10. The distance time graph of two bodies A and B are shown in Figure. Observe the graph carefully and answer the following questions :

(i) Do both the bodies start from the same position ?

(ii) Do they have uniform speed ?

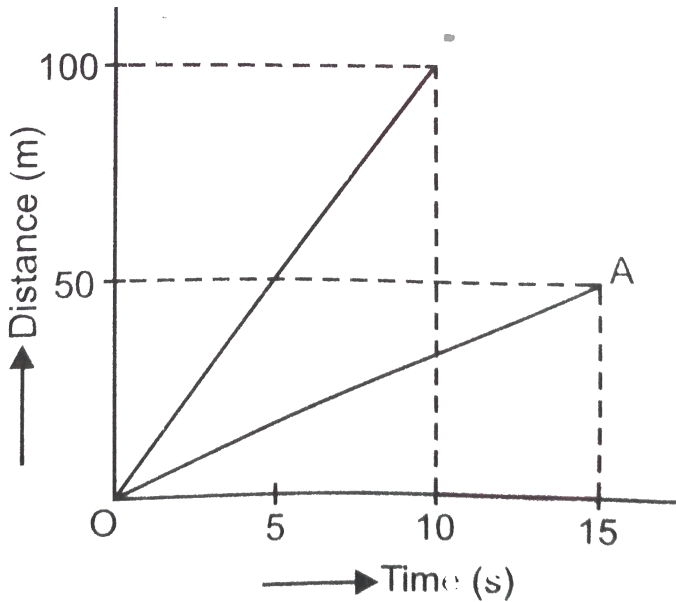
(c) Does anybody have acceleration ?

(iv) What is speed of A ?

(v) What is speed of B ?

(vi) Without actual calculation, can you infer

which body is travelling faster ?



[Watch Video Solution](#)

11. The velocity time graphs of two bodies A and B are shown in Figure. Observe these graphs carefully and answer the following

questions :

(i) From the shape of graphs, what is nature of motion of A and B

(ii) What do you infer from the slopes of the graphs ?

(iii) What are the initial velocities of A and B ?

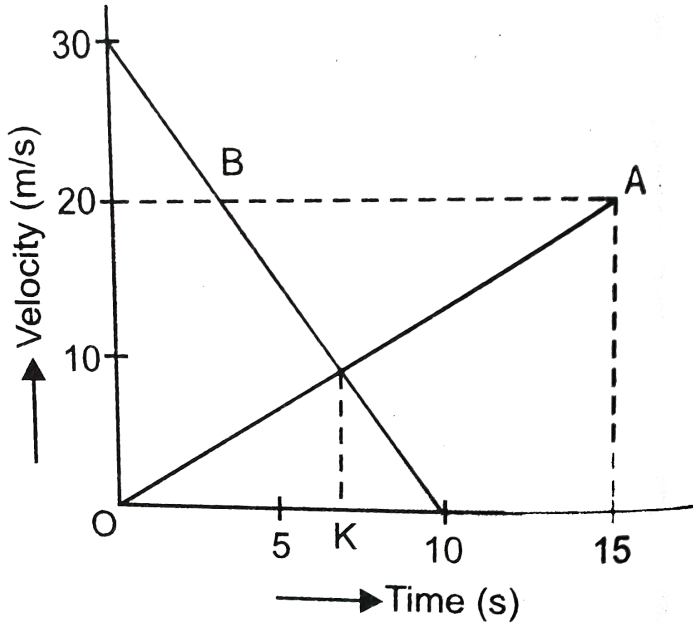
(iv) What is acceleration of A ?

(v) What is acceleration of B ?

(vi) What distance is travelled by B before coming to rest ?

(vii) At what time will the two bodies have

equal velocity ?



[Watch Video Solution](#)

12. Draw velocity time graph of a body which is moving with some initial velocity and a

constant acceleration.



[Watch Video Solution](#)

13. Draw distance time graph of a body moving with constant acceleration.



[Watch Video Solution](#)

14. Draw velocity time graph of a body moving with constant retardation.



[Watch Video Solution](#)

15. A body A is at rest and body B is moving with a constant velocity.

Draw (i) distance time graph of A and B

(ii) velocity time graph of A and B .



Watch Video Solution

16. A driver of a car A travelling at 54km/h applies the brakes and stops the car in 4 seconds. Another driver of car B travelling at

36km/h applies the brakes and stops the car in 6 seconds. Plot speed versus time graphs for the two car. which of the cars travelled farther before stopping ?



[Watch Video Solution](#)

Formative Assesment Paper Pen Test

1. Out of distance and displacement, which one is vector ?

A. distance

B. displacement

C. both distance and displacement

D. neither distance nor displacement

Answer: B



Watch Video Solution

2. An object may appear to be moving to one person and the same object may appear to be at rest to another person. This statement is

A. always correct

B. always false

C. sometimes correct and sometimes false

D. cannot say.

Answer: A



Watch Video Solution

3. A person moves through $100m$ in going from A to B and travels the same distance in returning from B to A . This displacement is

A. $100m$

B. $200m$

C. $100\sqrt{2}m$

D. zero

Answer: D



Watch Video Solution

4. A particle is moving in a circle of diameter $10m$. The distance covered by it on completing 2 revolutions is

A. $40m$

B. $20m$

C. $20\pi m$

D. zero

Answer: C



Watch Video Solution

5. Units of uniform speed and non uniform speed are

A. $m / s, m / s^2$

B. $m / s, m^2 / s$

C. $m / s, m / s$

D. $m - s, m / s$

Answer: C



Watch Video Solution

6. Velocity of a body is variable when

A. only speed of the body changes

B. only direction of the body changes

C. both the speed and direction of the
body change

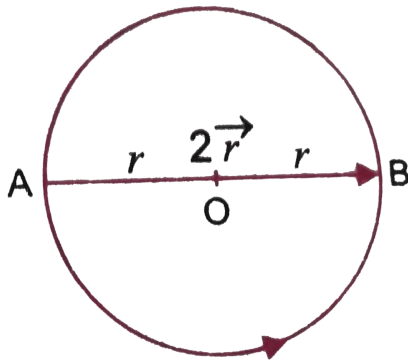
D. either the speed and direction or both
change

Answer: D



Watch Video Solution

7. AB is diameter of circle of radius r . A particle starting from A completes two and half revolution. Calculate the distance travelled by the particle and its displacement



[Watch Video Solution](#)

8. Unit of time occurs twice in unit of acceleration. Why ?



[Watch Video Solution](#)

9. A train is moving with a velocity of $36\text{km} / \text{h}$.
Calculate the distance it travel in 15 sec.



[Watch Video Solution](#)

10. In the definition of uniform speed, what is the significance of the words 'howsoever small the interval may be' ?



Watch Video Solution

11. Displacement may be zero even when distance travelled is not zero ? Is not true ? Is the reverse also true ? Give examples.



Watch Video Solution

12. A body thrown vertically upwards with a certain velocity returns to the ground. What is its displacement and distance travelled ? How are the two affected when velocity of projection is doubled ?



Watch Video Solution

13. When will you say a body is in (i) uniform acceleration ? (ii) non-uniform acceleration ?



Watch Video Solution

14. (a) In uniform motion, the path of an object can be a straight line, curved line, zig zag line or even a circle. Why ?

(b) What does odometer of an automobile measure ?



Watch Video Solution

15. (a) The time interval between transmission and reception of a signal at radar station is $30\mu s$. What is the distance of the intercepting

plane from the station ?

(b) Define uniform velocity and uniform acceleration. What are their units ?



[Watch Video Solution](#)

Formative Assessment 1 B Oral Testing Exercise

1. The distance time graph of a body is a st. line making an angle of 30° with time axis.

What is speed ?



[Watch Video Solution](#)

Paper Pen Test

1. (a) The distance time graph of a body is parallel to the time axis. What does it indicate ?

(b) The distance time graph of a body coincide with time axis. What does it indicate ?

A. in uniform motion

B. at rest

C. in uniformly accelerated motion

D. in zig zag motion.

Answer: B



Watch Video Solution

2. The velocity time graph of a body is a straight line parallel to the time axis. Is the body at rest ?

A. at rest

B. having uniform acceleration

C. having zero acceleration

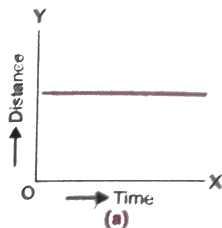
D. having non uniform acceleration.

Answer: C



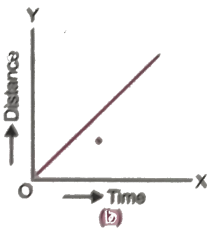
Watch Video Solution

3. Which of the following graphs represent a uniformly accelerated motion ?

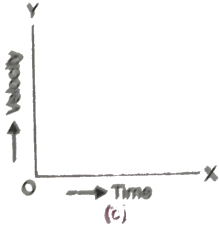


A.

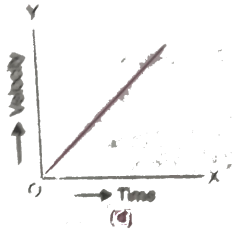
B.



C.



D.

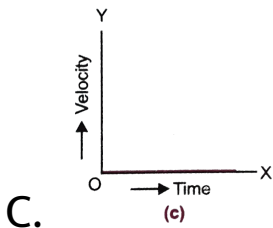
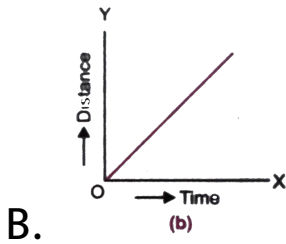
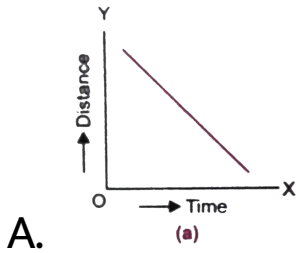


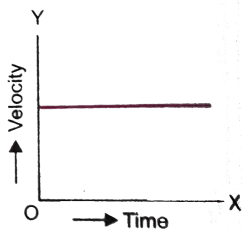
Answer: D



Watch Video Solution

4. Which of the following graphs represent a body at rest ?





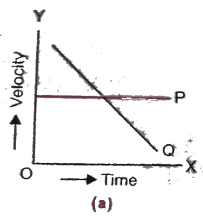
D.

Answer: C

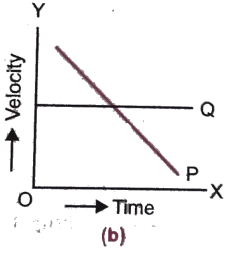


Watch Video Solution

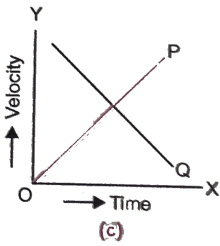
5. A body P moves with uniform velocity and another body Q moves with uniform retardation. The correct velocity time graph of the two bodies is



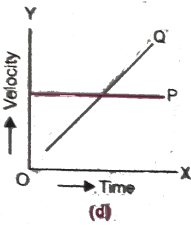
A.



B.



C.

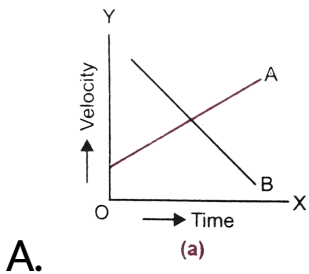


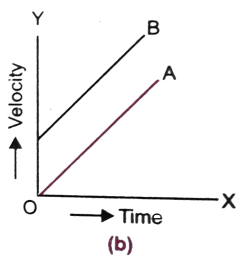
D.

Answer: A

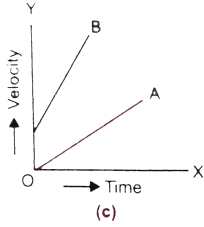


6. A body A starts from rest and moves with a uniform acceleration along a straight line. Another body B has some initial velocity and moves with larger acceleration than that of A . The correct velocity time graphs

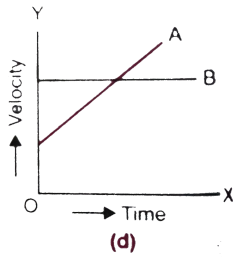




B.



C.



D.

Answer: C



Watch Video Solution

7. (a) A body starting from rest moves with a constant acceleration of $5m/s^2$. What is velocity of the body after 10 sec ?

(b) A scooter moving with a velocity of $18km/h$ is brought to rest in 5s by applying brakes. What is the acceleration produced ?



[Watch Video Solution](#)

8. The distance (s) travelled by a body in time

(t) is given by $s = ut + \frac{1}{2}at^2$.

How is the formula modified when

(i) body starts from rest , (ii) motion of body is uniform.



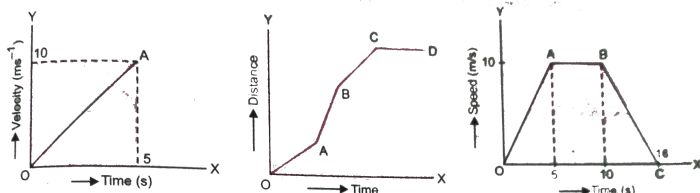
[Watch Video Solution](#)

9. A body is thrown vertically upwards with a velocity of $98m/s$. If $g = 9.8m/s^2$, when will it reach its highest point ? What will be its maximum height ?



[Watch Video Solution](#)

10. The velocity time graph of a body represented as shown in Fig. Calculate the distance by the body in 5 second.



Watch Video Solution

11. Draw a diagram to represent the direction of motion of a body moving along a circular

path. Justify why such a motion is accelerated motion.



[Watch Video Solution](#)

12. A body is dropped vertically from a certain height. Draw velocity time graph of the body.



[Watch Video Solution](#)

13. The distance time graph of a body is as shown in Figure. In which portion

(i) velocity is maximum (ii) velocity is minimum

(iii) velocity is zero ?



[View Text Solution](#)

14. The speed time graph of a body is as shown in Figure. Calculate

(i) acceleration of body, (ii) retardation of body, (iii) total distance travelled by the body.



[View Text Solution](#)

15. Using velocity time graph, establish the relation $s = ut + \frac{1}{2}at^2$, where the symbols have their usual meanings.



Watch Video Solution

Ncert Multiple Choice

1. A particle moves in a circle of radius R . In half the period of revolution its displacement is and distance covered is

A. Zero

B. πr

C. $2r$

D. $2\pi r$

Answer: (c)



Watch Video Solution

2. A body is thrown vertically upward with velocity u , the greatest height h to which it will rise is,

A. u / g

B. $u^2 / 2g$

C. u^2 / g

D. $u / 2g$

Answer: B



Watch Video Solution

3. The numerical ratio of displacement to the distance covered is always

A. always less than 1

B. always equal to 1

C. always more than 1

D. equal or less than 1

Answer: D



Watch Video Solution

4. If the displacement of an object is proportional to square of time, then the object moves with

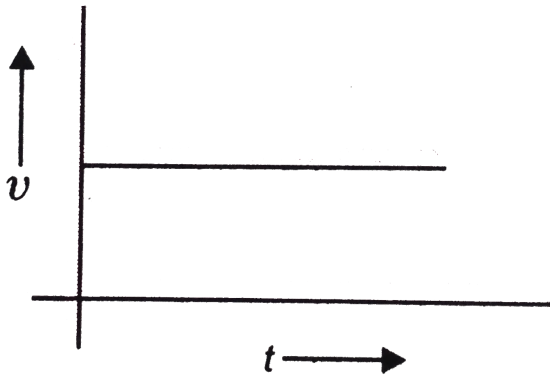
- A. uniform velocity
- B. uniform acceleration
- C. increasing acceleration
- D. decreasing acceleration

Answer: B



Watch Video Solution

5. From the given $v - t$ graph (Figure), it can be inferred that the object is



A. in uniform motion

B. at rest

C. in non-uniform motion

D. moving with uniform acceleration

Answer: A



Watch Video Solution

6. Suppose a boy is enjoying a ride on a merry-go-round which is moving with a constant speed of 10m.s^{-1} . It implies that the boy is

A. at rest

B. moving with no acceleration

C. in acceleration motion

D. moving with uniform velocity

Answer: C



Watch Video Solution

7. Area under a $(v - t)$ graph represents a physical quantity which has the unit

A. m^2

B. m

C. m^3

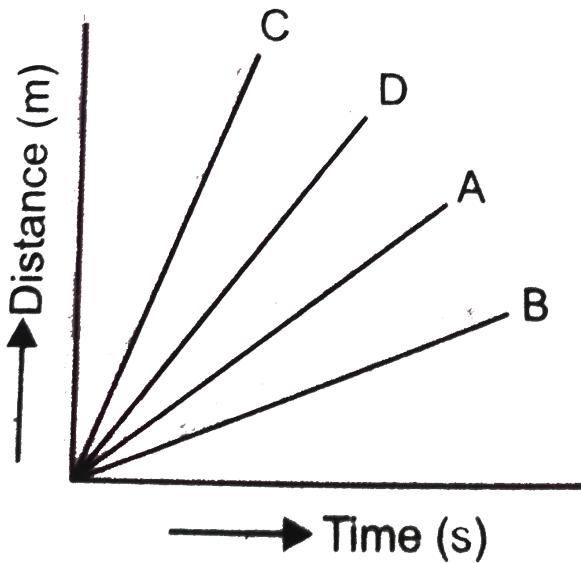
D. ms^{-1}

Answer: B



Watch Video Solution

8. Four cars A , B and C are moving on a levelled road. Their distance versus time graphs are shown in Fig. Choose the correct statement



A. Car A is faster than Car D .

B. Car B is the slowest.

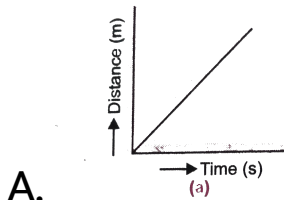
C. Car D is faster than Car C .

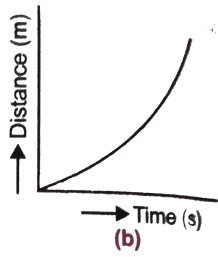
D. Car C is the slowest.

Answer: B

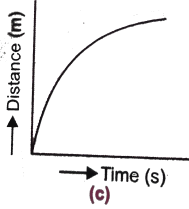
 [Watch Video Solution](#)

9. Which of the following figures represents uniform motion of a moving object correctly ?

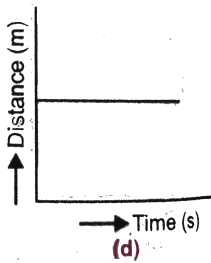




B.



C.



D.

Answer: A



Watch Video Solution

10. What does the slope of a velocity-time graph indicate ?

- A. the distance
- B. the displacement
- C. the acceleration
- D. the speed

Answer: C



Watch Video Solution

11. In which of the following cases of motions, the distance moved and the magnitude of displacement are equal ?

A. If the car is moving on straight road

B. If the car is moving on circular path

C. The pendulum is moving to and fro

D. The earth is moving around the Sun

Answer: A



Watch Video Solution

1. Statement I: A body can have acceleration even if its velocity is zero at a given instant .

Statement II: A body is momentarily at rest when it reverses its direction of velocity.



[Watch Video Solution](#)

2. Can the motion of a body be accelerated even when it is moving uniformly ?



[Watch Video Solution](#)

3. An object has moved through a distance. Can it have zero displacement ? If yes, support your answer with an example.



[Watch Video Solution](#)

4. Draw distance time graph of a body moving with :

- (i) positive acceleration
- (ii) negative acceleration.



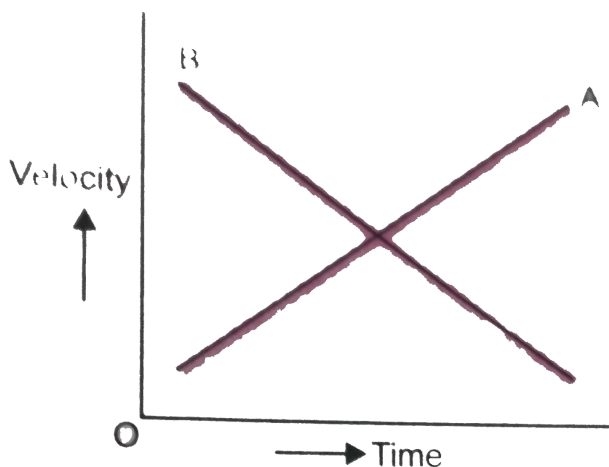
[Watch Video Solution](#)

5. A train starting from one station accelerates uniformly over a distance of 0.5km , moves with a constant speed over 35km , retards uniformly over the last 10km coming to a stop at another station 50km away from the first station. Draw velocity distance graph of the train.



[Watch Video Solution](#)

6. (a) The velocity time graph of two bodies are shown in Figure. Slope of the graph for body A is positive. What does it signify ?



(b) The slope of velocity time graph of body B is negative. What does it represent ?



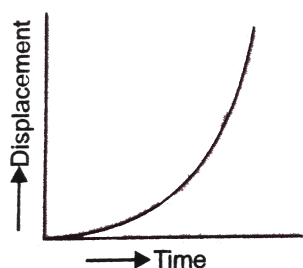
[Watch Video Solution](#)

7. Explain briefly the concepts of velocity and acceleration.

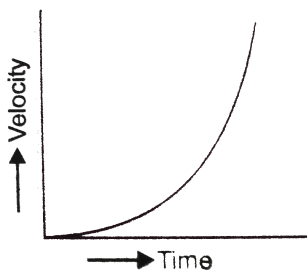


[Watch Video Solution](#)

8. How do you interpret the two graphs shown in Figure ?



(a)



(b)



[Watch Video Solution](#)

9. A body is decelerating uniformly for 5 second to a constant speed and moves with this speed for 30 seconds, accelerates for 10sec to acquire the speed it had in the beginning. Draw velocity time graph of the body.



Watch Video Solution

10. Have you ever experienced that the train in which you are sitting appears to move while it

is actually at rest ? If yes, explain why. What do you learn from this experience ?



[Watch Video Solution](#)

11. A ball thrown vertically upwards with a speed of 19.6ms^{-1} from the top of a tower returns to earth in 6s . Calculate the height of the tower.



[Watch Video Solution](#)

12. On turning a corner, a motorist rushing at 44m s^{-1} finds a child on the road 100m away. He applies the brakes so as to stop the motorcar within 1m of the child. Calculate the time required to stop.



Watch Video Solution

13. Brakes are applied to a train travelling at 72km/h . After passing over 200m , its velocity reduces to 36km/h . At the same rate of

retardation, how much further will it go before it is brought to rest ?



[Watch Video Solution](#)

14. A girl moves along the boundary of a square field of side $20m$ in $80s$. What will be the magnitude of displacement at the end of $200s$? Also calculate average velocity.



[Watch Video Solution](#)

15. Draw velocity time graph of a body

(i) moving with a uniform retardation (ii) moving with a variable acceleration.



Watch Video Solution

16. Figure is the distance - time graph of an object . Do you think it represents a real situation ? If so , why ? If not , why not?



Watch Video Solution

17. What is uniform circular motion ? Show that it is an accelerated motion inspite of being uniform.



Watch Video Solution

18. Automobiles are fitted with a device that shows the distance travelled. Such a device is known as an odometer. A car is driven from Bhubneshwar to New Delhi. The difference between the final reading and initial reading of the odometer is 1850km . Read the above

passage and answer the following questions :

(i) Is the displacement between Bhubneshwar and New Delhi 1850km ?

(ii) How can you find the displacement between Bhubneshwar and New delhi ?

What is more relevant to your journey : distance or displacement ? Justify.



[Watch Video Solution](#)

19. The speed time graph of a body is shown in Figure. Observer the graph carefully and

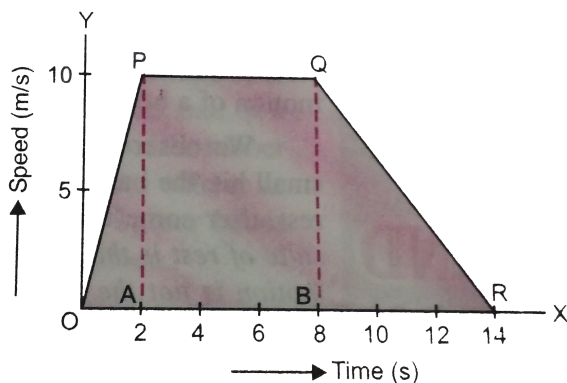
answer the following :

(i) What kinds of motion are represented by

OP , PQ and QR ?

(ii) Calculate acceleration of the body for the first 2 sec.

(iii) Calculate retardation of body from 8s to 14s.



Watch Video Solution

20. Establish the equation for position time relation (i.e., $s = ut + \frac{1}{2}at^2$) using velocity time graph. How is the equation modified when

- (i) a body is just dropped from some height,
- (ii) a body is thrown vertically upwards with some velocity ?



Watch Video Solution

21. (a) Draw distance time graph when a body is at rest. How is the graph modified when the body is moving with a uniform velocity ?

(b) A car moving at $36\text{km} / \text{h}$ is brought to rest in 0.1km . What is the retardation ?



[Watch Video Solution](#)

22. Use graphical method to derive the relation $v^2 - u^2 = 2as$, where the symbols have their usual meanings.





[Watch Video Solution](#)

23. A person goes to market, makes purchases and comes back at a constant slower speed. Draw displacement-time and velocity time graphs of the person.



[Watch Video Solution](#)

24. State velocity-time relation in uniformly accelerated motion. Use graphical method to obtain this relation.



Watch Video Solution