

PHYSICS SET AMOTION

1. An object has moved through a distance. Can it have zero displacement? If yes, support your answer with an example.
2. Which of the following is true for displacement? (a) it cannot be zero. (b) its magnitude is greater than the displacement travelled by the object.
3. An object travels 16 m in 4 s and the other 16 m in 2 s. What is the average speed of the object?
4. Distinguish between speed and velocity.
5. Under what conditions is magnitude of average velocity of an object equal to its average speed?
6. What does the odometer of an automobile measure?
7. What does the path of an object look like when it is in uniform motion?
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 $3 \times 10^8 \text{ ms}^{-1}$.
9. The odometer of a car reads 2000 km at the start of a trip and 2400 km at the end of the trip. If the trip took 8 h, calculate the average speed of the car in km/h and m/s.
10. A woman travels a distance of 1 m towards north then 2 m towards east and finally 3 m towards south. Find: (a) the total distance (b) displacement.
11. Give three examples where distance is not equal to the magnitude of displacement.
12. What is the difference between distance and displacement.
13. A square track of edge length 100 m, an athlete starts from one corner and reaches diagonally opposite corner. Find the distance and magnitude of displacement of the athlete.
14. A cricket ball is thrown up. It reaches a height of 10 m from the point of throw and then reaches back to the point of throw. Find the distance and displacement of the ball.
15. Define uniform motion and acceleration.
16. A car is moving with a speed of 30 m/s. Find the distance covered by the car in 1 minute.
17. A body travels a distance of 10 km with a constant speed of 30 km/h and then the next 40 km at a constant speed of 50 km/h. Find the average speed for the whole journey.
18. An odometer of a car reads 2000 km at the start of a trip and 2400 km at the end of the trip. If the trip took 8 h, calculate the average speed of the car in km/h and m/s.
19. A 100 m long train crosses a bridge of length 200 m in 50 seconds with constant velocity. Find the velocity.
20. Velocity-time graph of a body is parallel to time axis. What is the acceleration of the body?
21. A car accelerates uniformly from 10 km/h to 36 km/h in 5 sec. Calculate the acceleration and the distance covered by the car in that time.
22. A car moving along a straight line at a speed of 72 km/h stops in 5 sec after the brakes are applied. Find the acceleration and plot the graph of speed versus time.
23. An object is moving with a velocity of 6 m/s and with an acceleration of -1 m/s^2 . What will be the distance travelled by the car and time taken for coming to rest.
24. A car moves a circular path of radius 20 m in 50 s with a uniform speed. Find the speed.
25. The two objects move in circular path of radii in the ratio of 1: 3 and take same time to complete the circle, what is the ratio of their speed?
26. A bus accelerates uniformly from 18 km/h to 36 km/h in 10 s. calculate the acceleration.
27. A bus is moving with a speed of 18 km/h. It comes to rest in 3 seconds on the application of brakes. Find the retardation, assuming it to be uniform.
28. A car attains a velocity of 36 km/h after accelerating uniformly from rest in 5 seconds. Find the distance travelled.

29. A car accelerates uniformly at the rate of 2 m/s^2 after starting from rest. Find the distance travelled and velocity attained in 4 seconds.
30. A car is moving at a speed of 18 km/h . It starts retarding uniformly at 1 m/s^2 and comes to rest. Find the distance travelled.