

Basic *suvat* Questions

1. A particle is accelerated uniformly from rest, so that after 10 seconds it has achieved a speed of 15 m/s. Find its acceleration and the distance it has covered?
2. A car accelerates uniformly from rest and after 12 seconds has covered 40m. What are its acceleration and its final velocity?
3. A train is uniformly retarded from 35m/s to 21m/s over a distance of 350m. Calculate the retardation and the time taken to come to rest from the 35m/s.
4. A particle is accelerated from 1m/s to 5m/s over a distance of 15m. Find the acceleration and the time taken.
5. A car accelerates uniformly from 5m/s to 15m/s taking 7.5 seconds. How far did it travel during this period.
6. A particle moves with uniform acceleration 0.5m/s^2 in a horizontal line ABC. The speed of the particle at C is 80m/s and the times taken from A to B and from B to C are 40 and 30 seconds respectively. Calculate
 - (a) Speed at A
 - (b) Distance BC
7. Initial velocity 5m/s, final velocity 36km/hr, acceleration 1.25m/s^2 . Distance?
8. A car accelerates from rest with acceleration 0.8m/s^2 for 5 seconds. Find the final velocity
9. A train starts from rest and accelerates uniformly at 1.5m/s^2 until it attains a speed of 30m/s. Find the time taken and the distance travelled.
10. A train travels along a straight piece of track between 2 stations A and B. The train starts from rest at A and accelerates at 1.25m/s^2 until it reaches a speed of 20m/s. It then travels at this speed for a distance of 1560m and then decelerates at 2m/s^2 to come to rest at B. Find
 - (a) Distance from A to B
 - (b) Total time taken for the journey
 - (c) Average speed for the journey
11. A car is being driven along a road at 25m/s when the driver suddenly notices that there is a fallen tree blocking the road 65m ahead. The driver immediately applies the brakes giving the car a constant retardation of 5m/s^2 . How far in front of the tree does the car come to rest?
12. In travelling the 70cm along a rifle barrel, a bullet uniformly accelerates from rest to a velocity of 210m/s. Find the acceleration involved and the time taken for which the bullet is in the barrel.

Answer to SUVAT Questions

- 1) 1.5 ms^{-2} 75m
- 2) 0.55 ms^{-2} 6.67 ms^{-1}
- 3) -1.12 ms^{-2} 31.25 secs
- 4) 5 secs 0.8 ms^{-2}
- 5) 75m
- 6) 45 ms^{-1} 2175m
- 7) 30m
- 8) 4 ms^{-1}
- 9) 300m 20secs
- 10) (a) 1820m
(b) 104 secs
(c) 17.5 ms^{-1}
- 11) 2.5m before the tree
- 12) 31500 ms^{-2} 0.0067 secs