

Motion in straight line-practice sheet

1. Derive equations of motions by graphically and calculus method.
2. A train leaves New delhi railway station at 9am and reaches jaipur , which is at a distance of 260km at 12:45 pm the train reaches alwar at a distance 150km from delhi at 11:30 am and stop there for 15 minutes .what is the average speed fo the train between alwar and jaipur?
3. A car with an initial velocity of 30m/s needs 45m to come to a complete stop. Determine the stopping distance of this same car with an initial velocity of 20m/s.
4. An airplane accelerates down a runway at 3.20 m/s^2 for 32.8 s until is finally lifts off the ground. Determine the distance traveled before takeoff.
5. A feather is dropped on the moon from a height of 1.40 meters. The acceleration of gravity on the moon is 1.67 m/s^2 . Determine the time for the feather to fall to the surface of the moon.
6. A stone is dropped from the top of the tower . Its speed after it has fallen 20m is
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7. A plane is travelling at velocity 100 km/hr, in the southward direction. It encounters wind travelling in the west direction at a rate of 25 km/hr. Calculate the resultant velocity of the plane.
8. An aeroplane flies with a velocity of 450 m/s to the north, while an aeroplane B travels at a velocity of 500 m/s to the south beside aeroplane A. Calculate the relative velocity of the aeroplane A with respect to aeroplane B.
9. Two towns A and B are connected by a regular bus service with a bus leaving in either direction every T mins. a man cycling with speed 20kmph in A to B direction notice that a bus goes past him every 18 min in direction of his motion. and every 6 min in opposite direction. The period T of bus service is....
10. A motorcycle traveling on the highway at a speed of 120 km/h passes a car traveling at a speed of 90 km/h. From the point of view of a passenger on the car, what is the velocity of the motorcycle?