

Physics worksheet – Straight line motion under constant acceleration

<i>Ignore air resistance in the following questions</i>	
Q1 A car starts from rest at 50 m to the west of a road sign. It travels to the east reaching 20 ms^{-1} after 15 s. Determine the position relative to the road sign at $t = 15 \text{ s}$.	Q2 A car starts from rest at 50 m west of a road sign. It has a velocity of 20 ms^{-1} east when it is 50 m east of the road sign. Determine the acceleration of the car.
Q3 During a 10-second period a car has an average velocity of 25 ms^{-1} and an acceleration of 2 ms^{-2} . Determine the initial and final velocities of the car in the 10-second period.	Q4 A racing car increases its speed to 30 ms^{-1} after a displacement of 80 m in 4 seconds. Calculate its acceleration and the change in its velocity during the 4-s period.
Q5 A stone is projected vertically upwards. It takes 3.2 s for it to return to the point of projection. Find the total distance covered.	Q6 A stone is projected vertically upwards from a height of 5 m above the ground. It takes 3.2 s for it to hit the ground. Find the total distance covered.
Q7 A stone is projected vertically upwards from a height of 5 m above the ground. It takes 3.2 s for it to hit the ground. Calculate the average speed and average velocity of the stone.	Q8 A marble is dropped from a height of 15 m above the ground, and at the same time a stone is projected vertically upwards from a height of 5 m above the ground. They pass each other after 1.0 s. Find the speed of projection of the stone.
Q9 A car travels in a straight road under constant acceleration. In the 5th second the car travels 15 m, and in the 6th second it travels 12 m. Find the speed of the car at $t = 0$.	Q10 A car travels in a straight road under constant acceleration. In the first 20 s the distance covered is 125 m and the displacement is 100 m east. Find the acceleration and initial velocity of the car.