Worksheet: Motion

NIOS · Class 9 · Science · 15 questions · 43 marks

Name: _____ Date: _____ Score: _____ / 43

Q1. A person walks 4 m east, then 3 m north. Find the distance and magnitude of displacement. *[1 mark]*

Q2. Convert 72 km/h to m/s. *[1 mark]*

Q3. A car starts from rest and acquires a velocity of 20 m/s in 4 s. Find its acceleration. *[2 marks]*

Q4. A car moving at 10 m/s accelerates at 2 m/s² for 5 s. Find the distance covered. *[2 marks]*

Q5. State the SI units of (a) displacement, (b) velocity, (c) acceleration. *[1 mark]*

Q6. A bullet leaves a 50-cm-long rifle barrel with a velocity of 400 m/s. Find its acceleration assuming uniform acceleration in the barrel. *[3 marks]*

Q7. A train travels half its journey at 60 km/h and the other half at 40 km/h. Find the average speed. *[3 marks]*

Q8. A stone is dropped from a height of 45 m. Find (a) the time to reach the ground, (b) the velocity just before hitting the ground. ($g = 10\ m/s^2$) *[3 marks]*

Q9. A car moving at 36 km/h is brought to rest by applying brakes over a distance of 10 m. Find the deceleration produced. *[3 marks]*

Q10. A ball is thrown vertically upward with initial velocity 20 m/s. (a) How high does it rise? (b) How long before it hits the ground? ($g = 10\ m/s^2$) *[4 marks]*

Q11. On a velocity-time graph, a body's velocity increases linearly from 0 to 20 m/s in 10 s, stays constant for 5 s, then decreases linearly to 0 in 5 s. Find: (a) acceleration in each phase, (b) total distance covered. *[4 marks]*

Q12. Two cars start from the same point at the same time. Car A moves with constant velocity 20 m/s. Car B starts from rest with acceleration 2 m/s^2. At what time will they meet again? *[4 marks]*

Q13. A stone is dropped from a tower. It covers 25 m in the LAST second of its fall. Find the height of the tower. ($g = 10\ m/s^2$) *[5 marks]*

Q14. The Earth orbits the Sun in a roughly circular path of radius 1.5×10^8 km. It takes 365.25 days. Find the orbital speed of the Earth in km/s. *[3 marks]*

Q15. A bus accelerates uniformly from rest and covers 36 m in the 4th second. Find (a) the acceleration, (b) the velocity at the end of the 4th second. *[4 marks]*