

## Worksheet: Motion

West Bengal State Board · 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/s<sup>2</sup> 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]*

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**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]

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**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. ( $g = 10 \text{ m/s}^2$ ) [3 marks]

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**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]

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**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? ( $g = 10 \text{ m/s}^2$ ) [4 marks]

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**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]

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**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<sup>2</sup>. At what time will they meet again? [4 marks]

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**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. ( $g = 10 \text{ m/s}^2$ ) [5 marks]

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

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**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]

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