

CLASS 11

PHYSICS

EXTRA QUESTIONS

Class 11 Physics Chapter 2 Motion in a Straight Line – Extra Questions with Answers

Extra practice questions for Class 11 Physics Chapter 2 (Motion in a Straight Line), beyond the textbook. These Class 11 Physics Chapter 2 important questions are handy for last-minute exam practice.

Contents

Very Short Answer Questions (1 mark)

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Class 11 Physics Chapter 2 – Solutions and Notes

Extra practice questions for Class 11 Physics Chapter 2 (Motion in a Straight Line), beyond the textbook. These Class 11 Physics Chapter 2 important questions are handy for last-minute exam practice.

Very Short Answer Questions (1 mark)

Q1. Is velocity a scalar or vector quantity?

Ans: Vector.

Q2. What does the slope of a position-time graph represent?

Ans: Velocity.

Q3. Write the kinematic equation relating v , u , a , t .

Ans: $v = u + at$.

Q4. Can average speed ever be greater than the magnitude of average velocity?

Ans: Yes, since speed considers total distance while velocity considers displacement, which can be smaller.

Q5. What is the formula for instantaneous velocity in calculus terms?

Ans: dx/dt (derivative of position with respect to time).

Short Answer Questions (2–3 marks)

Q6. A car travels 100 m north, then 40 m south. Find the total distance travelled and the net displacement.

Ans: Distance = $100+40 = 140$ m. Displacement = $100-40 = 60$ m north.

Q7. A particle starts from rest and accelerates uniformly at 2 m/s^2 for 5 seconds. Find its final velocity and the distance covered.

Ans: $v=u+at = 0+2(5) = 10 \text{ m/s}$. $x=ut+\frac{1}{2}at^2 = 0+\frac{1}{2}(2)(25) = 25 \text{ m}$.

Q8. Two trains, A and B, move in the same direction with velocities 30 m/s and 20 m/s. Find the relative velocity of A with respect to B.

Ans: $v_{AB} = v_A - v_B = 30 - 20 = 10 \text{ m/s}$.

Higher-Order Thinking / Application Questions

Q9. A ball is thrown vertically upward with initial velocity 20 m/s (taking $g=10 \text{ m/s}^2$ downward as deceleration). Find the maximum height reached and the total time to return to the starting point, explaining the sign convention used.

Ans: Taking upward as positive, at maximum height $v=0$: $v^2=u^2-2gh$, so $0=20^2-2(10)h$, giving $h=400/20=20$ m. Time to reach max height: $v=u-gt$, $0=20-10t$, so $t=2$ s. By symmetry, total time to return = $2 \times 2 = 4$ s.

Q10. Explain, using the concept of relative velocity, why two cars moving in the same direction at the same speed appear stationary relative to each other, and how this changes if one car accelerates.

Ans: If both cars have the same velocity, $v_{AB} = v_A - v_B = 0$, meaning from either driver's perspective, the other car appears to not be moving relative to them (constant position from each other). If one car accelerates, their velocities become unequal, so v_{AB} becomes non-zero, and the cars will appear to move apart or come closer to each other, changing their relative separation over time.

Class 11 Physics Chapter 2 – Solutions and Notes

For complete step-by-step answers and a quick summary, check the [Class 11 Physics Chapter 2 Solutions](#) and [Class 11 Physics Chapter 2 Revision Notes](#).

See also: [Chapter 1](#) | [Chapter 2](#)

Practice more: [Chapter 1](#)

Quick revision: [Chapter 1](#)

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