



QUICK DRILL · CBSE CLASS 11

Motion in a Straight Line

Physics · Chapter 2 · 15 MCQs · 20 minutes · PYQ-tagged with time budgets

DATE _____	TOTAL MARKS 15	DURATION 20 min	MARKING +1 / 0	TARGET ≥ 12/15
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OBJECTIVES

Reinforce the four core topics of Motion in a Straight Line via 15 PYQ-derived MCQs. Identify weak sub-topics via concept-node IDs (see answer key). Build per-question time budget habit.

INSTRUCTIONS

Attempt all 15. Time budget shown per Q (use it as pacing guide). Mark answers (A/B/C/D) in the margin. Answer key + explanations on the last page. **Don't peek — score yourself honestly.**

SECTION · QUICK DRILL

Q 1-15 · 20 MIN

Q1. A person walks 30 m east, then 40 m west. What is the total distance and the magnitude of displacement?

(A) Distance = 70 m, Displacement = 10 m west

(B) Distance = 70 m, Displacement = 70 m east

(C) Distance = 10 m, Displacement = 10 m

(D) Distance = 50 m, Displacement = 50 m

PYQ 2019 · Delhi · 1 m · 30s

Q2. A car starts from rest with constant acceleration 4 m/s^2 . What is its velocity after 5 s?

(A) 10 m/s

(B) 15 m/s

(C) 20 m/s

(D) 25 m/s

PYQ 2020 · Delhi · 1 m · 30s

Q3. A body is dropped from a height of 80 m. Taking $g = 10 \text{ m/s}^2$, the time to reach the ground is:

(A) 2 s

(B) 3 s

(C) 4 s

(D) 5 s

PYQ 2018 · Outside Delhi · 1 m · 45s

Q4. The slope of a position-time graph gives:

(A) Acceleration

(B) Displacement

(C) Velocity

(D) Distance

PYQ 2021 · Delhi · 1 m · 20s

Q5. A ball is thrown vertically up with initial velocity 20 m/s ($g = 10 \text{ m/s}^2$). Maximum height reached is:

(A) 10 m

(B) 15 m

(C) 20 m

(D) 25 m

PYQ 2022 · Delhi · 1 m · 45s

Q6. Which of the following is true at the highest point of a body thrown vertically upward?

(A) Velocity = 0, Acceleration = 0

(B) Velocity = 0, Acceleration = g downward(C) Velocity = g , Acceleration = 0(D) Velocity = g upward, Acceleration = g

PYQ 2019 · Delhi · 1 m · 30s

Q7. Distance covered by a body in the 5th second, starting from rest, with $a = 4 \text{ m/s}^2$ is:

(A) 18 m

(B) 20 m

(C) 36 m

(D) 50 m

PYQ 2020 · Outside Delhi · 1 m · 45s

Q8. A car covers the first half of a distance with speed 40 km/h and the second half with 60 km/h . Average speed for the whole journey is:

(A) 48 km/h

(B) 50 km/h

(C) 52 km/h

(D) 55 km/h

PYQ 2023 · Delhi · 1 m · 60s

Q9. A body moves with velocity $v = 4t \text{ m/s}$ (t in seconds). Its acceleration is:

(A) 0 m/s^2 (B) 4 m/s^2 (C) $4t \text{ m/s}^2$ (D) 2 m/s^2

PYQ 2021 · Outside Delhi · 1 m · 30s

Q10. The area under a velocity-time graph represents:

(A) Acceleration

(B) Displacement

(C) Speed

(D) Average velocity

PYQ 2022 · Outside Delhi · 1 m · 20s

- Q11.** Two trains A and B move in opposite directions with speeds 60 m/s and 40 m/s. Relative velocity of A with respect to B is:
(A) 20 m/s **(B)** 60 m/s
(C) 100 m/s **(D)** 80 m/s
 PYQ 2018 · Delhi · 1m · 30s
- Q12.** A particle returns to its starting point after going round a circular track once. Its displacement is:
(A) Equal to circumference **(B)** Zero
(C) Equal to diameter **(D)** Equal to radius
 PYQ 2020 · Delhi · 1m · 30s
- Q13.** A stone is thrown vertically up with initial velocity 30 m/s. Taking $g = 10 \text{ m/s}^2$, time to return to starting point is:
(A) 3 s **(B)** 6 s
(C) 9 s **(D)** 12 s
 PYQ 2023 · Outside Delhi · 1m · 45s
- Q14.** If a body has uniform velocity, its acceleration is:
(A) Equal to velocity **(B)** Zero
(C) Positive **(D)** Negative
 PYQ 2019 · Outside Delhi · 1m · 20s
- Q15.** A car decelerates uniformly from 20 m/s to rest in 4 s. Distance covered during deceleration is:
(A) 20 m **(B)** 40 m
(C) 60 m **(D)** 80 m
 PYQ 2024 · Delhi · 1m · 45s

ANSWER KEY & EXPLANATIONS

Q 1-15 · MARK YOUR SCORE

Q1. Answer: A

Distance = $30 + 40 = 70 \text{ m}$ (path length adds). Displacement = $30 \text{ east} + 40 \text{ west} = 10 \text{ m west}$ (signed sum).

Q2. Answer: C

$v = u + at = 0 + 4 \times 5 = 20 \text{ m/s}$.

Q3. Answer: C

$s = ut + \frac{1}{2}gt^2 \Rightarrow 80 = 0 + \frac{1}{2}(10)t^2 \Rightarrow t^2 = 16 \Rightarrow t = 4 \text{ s}$.

Q4. Answer: C

Slope of x-t graph = $dx/dt = \text{velocity}$.

Q5. Answer: C

$v^2 = u^2 + 2as$. At top $v = 0$, $a = -g$. $0 = 400 - 20s \Rightarrow s = 20 \text{ m}$.

Q6. Answer: B

At peak, velocity is momentarily zero but acceleration is still g downward — that is why the body falls back.

Q7. Answer: A

$s_n = u + \frac{a}{2}(2n - 1) = 0 + \frac{4}{2}(2 \times 5 - 1) = 2 \times 9 = 18 \text{ m}$.

Q8. Answer: A

For equal distances at unequal speeds, average speed = $\frac{2(v_1)(v_2)}{(v_1+v_2)} = \frac{2 \times 40 \times 60}{100} = 48 \text{ km/h}$. (Arithmetic mean 50 is wrong.)

Q9. Answer: B

$a = dv/dt = d(4t)/dt = 4 \text{ m/s}^2$ (constant).

Q10. Answer: B

Integral of $v \, dt = \text{displacement}$; geometrically this is the signed area under the v-t curve.

Q11. Answer: C

Opposite directions: $v_A = +60$, $v_B = -40$. $v_{AB} = v_A - v_B = 60 - (-40) = 100 \text{ m/s}$.

Q12. Answer: B

Final position = initial position $\Rightarrow$ displacement = 0. Distance = circumference, but displacement is zero.

Q13. Answer: B

Time up = $u/g = 30/10 = 3 \text{ s}$. By symmetry, time down = 3 s. Total = 6 s.

Q14. Answer: B

Uniform velocity means $dv/dt = 0$, so $a = 0$.

Q15. Answer: B

$a = (0 - 20)/4 = -5 \text{ m/s}^2$. $s = ut + \frac{1}{2}at^2 = 20 \times 4 + \frac{1}{2}(-5)(16) = 80 - 40 = 40 \text{ m}$.