

Topic quiz: Motion graphs

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IBDP Physics SL · Grade 11 · A.1 Kinematics · 10 multiple-choice questions

Name: _____

Class: _____

Date: _____

How to use. Practise with the simulations and worksheets first. Then answer every question: circle one letter and write it in the grid below. Use $g = 9.81 \text{ m s}^{-2}$ and show any working next to the question.

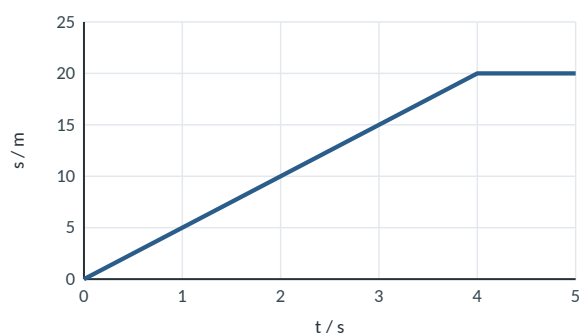
Check yourself online: the same quiz with instant feedback and explanations — <https://school.taneski.com/physics/dp/quiz-motion-graphs/>



1	2	3	4	5	6	7	8	9	10

Question 1

The graph shows the displacement s of a cyclist against time t . What is the velocity of the cyclist?



- (A) 0.20 m s^{-1} (B) 5.0 m s^{-1}
(C) 20 m s^{-1} (D) 80 m s^{-1}

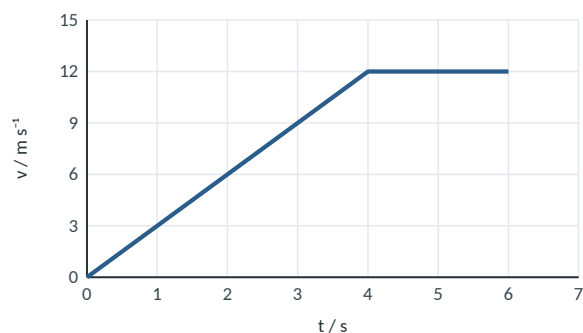
Question 2

What does the gradient of a velocity–time graph represent?

- (A) Displacement (B) Distance travelled
(C) Speed (D) Acceleration

Question 3

The graph shows the velocity v of a car against time t . What is the displacement of the car in the first 6.0 s?



- (A) 48 m (B) 24 m
(C) 36 m (D) 72 m

Question 4

An object moving at 2.0 m s^{-1} has a constant acceleration of 3.0 m s^{-2} for 4.0 s in the direction of motion. What is its velocity at the end?

- | | |
|--|---|
| ☐ (A) 6.0 m s^{-1} | ☐ (B) 12 m s^{-1} |
| ☐ (C) 14 m s^{-1} | ☐ (D) 24 m s^{-1} |
-

Question 5

A car accelerates uniformly from 8.0 m s^{-1} to 20 m s^{-1} in 6.0 s . How far does it travel in this time?

- | | |
|---|---|
| ☐ (A) 60 m | ☐ (B) 84 m |
| ☐ (C) 120 m | ☐ (D) 168 m |
-

Question 6

A ball is thrown vertically upwards at 12 m s^{-1} . Air resistance is negligible. What is its maximum height?

- | | |
|---|--|
| ☐ (A) 1.2 m | ☐ (B) 0.61 m |
| ☐ (C) 7.3 m | ☐ (D) 14.7 m |
-

Question 7

The displacement–time graph of an object is a curve that gets steeper as time goes on. What is happening to the object?

- ☐ (A) It is slowing down
 - ☐ (B) It is moving at constant velocity
 - ☐ (C) It is at rest
 - ☐ (D) It is speeding up
-

Question 8

A ball is thrown vertically upwards and caught again at the same height. Up is positive and air resistance is negligible. Which describes its velocity–time graph?

- ☐ (A) A straight line with a negative gradient that crosses the time axis
 - ☐ (B) A straight line with a positive gradient starting at zero
 - ☐ (C) A horizontal line above the time axis
 - ☐ (D) A V-shape that touches the time axis at the top of the flight
-

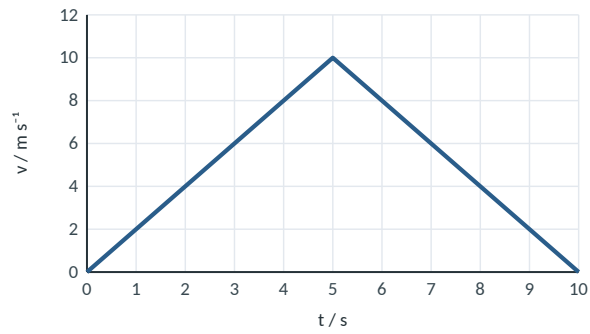
Question 9

A cyclist brakes uniformly from 15 m s^{-1} to rest in a distance of 30 m . What is the magnitude of the deceleration?

- | | |
|---|--|
| ☐ (A) 0.50 m s^{-2} | ☐ (B) 2.0 m s^{-2} |
| ☐ (C) 3.75 m s^{-2} | ☐ (D) 7.5 m s^{-2} |

Question 10

The graph shows the velocity of a toy car against time. What is its average speed over the 10 s?



☐ A 2.5 m s^{-1}

☐ B 5.0 m s^{-1}

☐ C 10 m s^{-1}

☐ D 50 m s^{-1}

End of quiz · Score: _____ / 10