2.1 Motion

Question Paper

Course	DP IB Physics
Section	2. Mechanics
Topic	2.1 Motion
Difficulty	Easy

To be used by all students preparing for DP IB Physics SL
Students of other boards may also find this useful

Question 1

A sprint walker completes a 200 m race in 40 s. What is their average speed during the race?

A. 5 $m\,s^{-1}$

B. 6 $m\,s^{-1}$

C. 7 $m\,s^{-1}$

D. 8 $m\,s^{-1}$

[1 mark]

Question 2

A car accelerates from rest to a speed of 40 $m\,s^{-1}$ in 5 seconds. What is the car's acceleration?

A. 5 $m\,s^{-2}$

B. 8 $m\,s^{-2}$

C. 20 $m\,s^{-2}$

D. 35 $m\,s^{-2}$

[1 mark]

Question 3

What is the definition of acceleration?

A. The length between two points

B. The length between two points in a certain direction

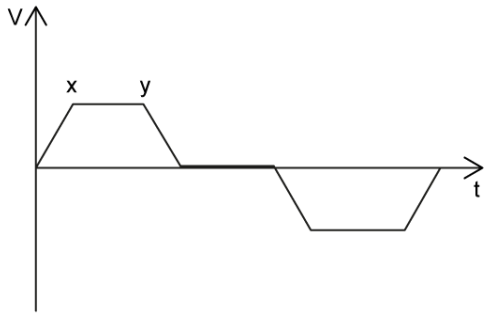
C. The rate of change of displacement

D. The rate of change of velocity

[1 mark]

Question 4

A velocity-time graph is shown for an object. Which statement describes the object's motion between X and Y correctly?



A. Constant acceleration

B. Increasing acceleration

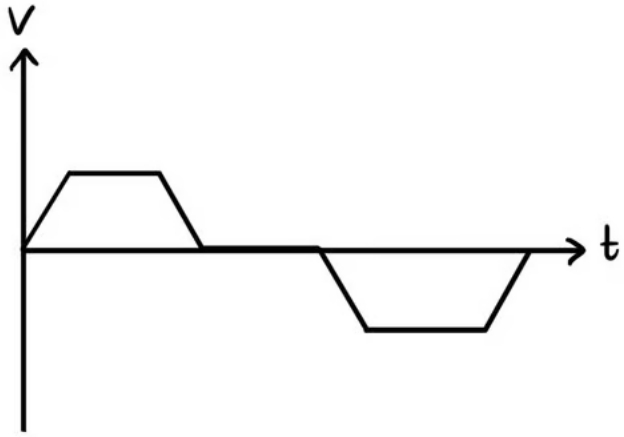
C. Constant velocity

D. Decreasing velocity

[1 mark]

Question 5

A velocity-time graph for an object is shown.



Which property of the graph represents the total displacement of the object?

A. The gradient of the line

B. The total area between the line and the axis

C. The *y*-intercept

D. The *x*-intercept

[1 mark]

Question 6

What does the gradient of a displacement-time graph represent?

A. Distance

B. Speed

C. Velocity

D. Acceleration

[1 mark]

Question 7

A luxurious speed boat travels down the French Riviera with an initial velocity of 10 m s^{-1}. The owner wishes to show off the power of its engine, accelerating at a rate of 2 m s^{-2} for 5 seconds. What is the final velocity of her speed boat?

A. 20 m s^{-1}

B. 22 m s^{-1}

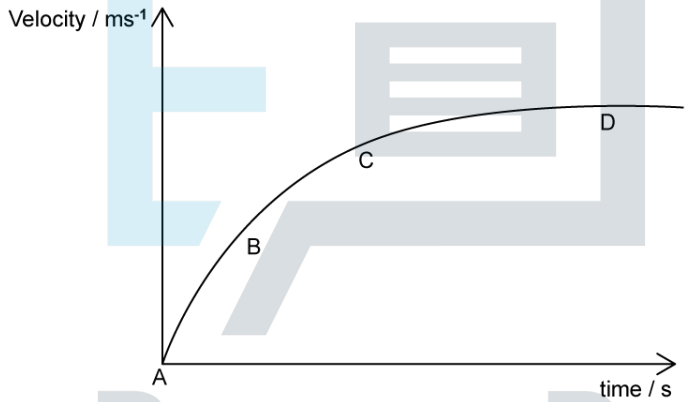
C. 24 m s^{-1}

D. 26 m s^{-1}

[1 mark]

Question 8

The graph below shows the motion of a skydiver in free fall.



What point on the graph represents the skydiver reaching terminal velocity?

[1 mark]

Question 9

A ball is thrown upward with an initial velocity of +3 m s^{-1}. What SUVAT equation will correctly calculate the maximum height reached by the ball?

A. $v = u + at$

B. $s = ut + \frac{1}{2}at^2$

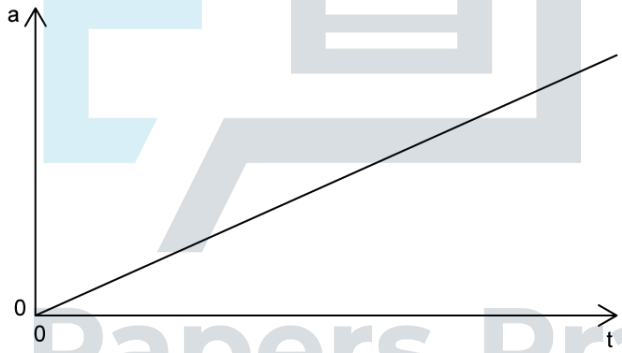
C. $v^2 = u^2 + 2as$

D. $s = \frac{(v+u)t}{2}$

[1 mark]

Question 10

Ashika draws a graph to show the variation of acceleration *a* with time *t* of an object.



What can she deduce from this graph only, and what quantity from the graph is used to make this deduction?

	Deduction	Quantity used
A.	change in velocity	gradient of graph
B.	change in velocity	area under line
C.	change in displacement	gradient of graph
D.	change in displacement	area under line

[1 mark]