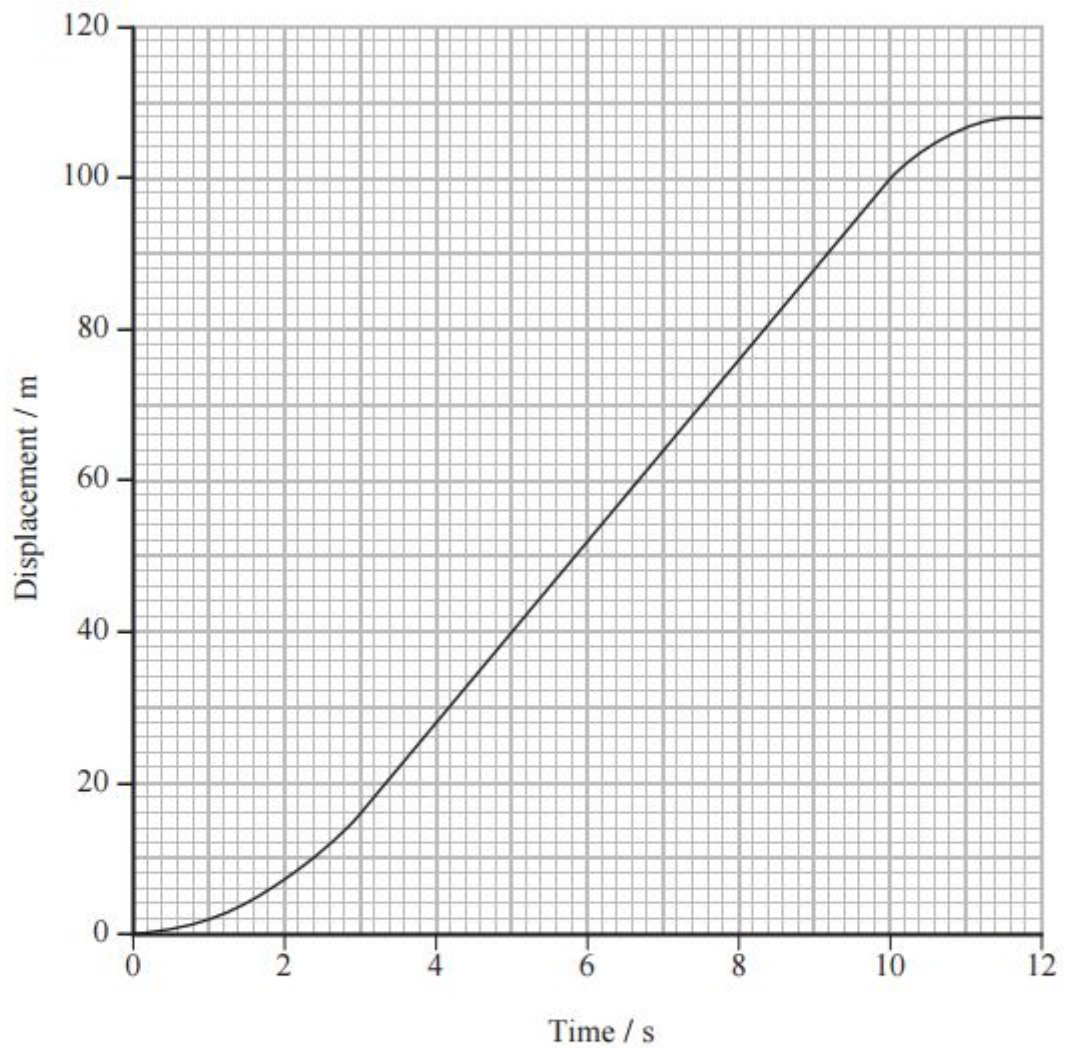# Motion Graphs MCQ QP 1

Questions 1 and 2 refer to the graph below.

The graph is a displacement-time graph for a runner.
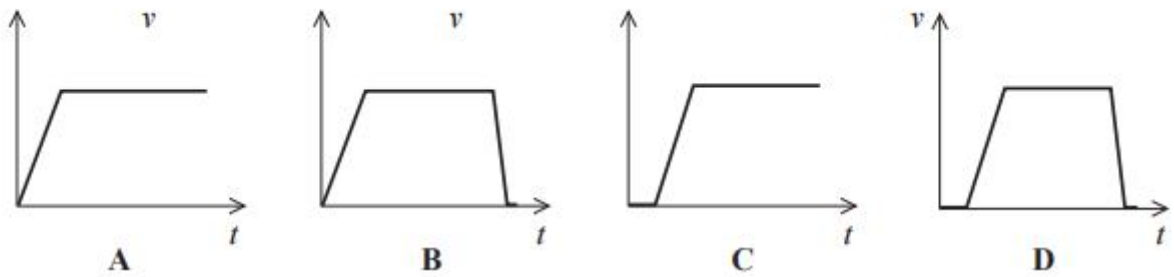

Time / s

1   The velocity of the runner at 5 s is approximately

☒ A   8 m s^{-1}

☒ B   9 m s^{-1}

☒ C   12 m s^{-1}

☒ D   40 m s^{-1}
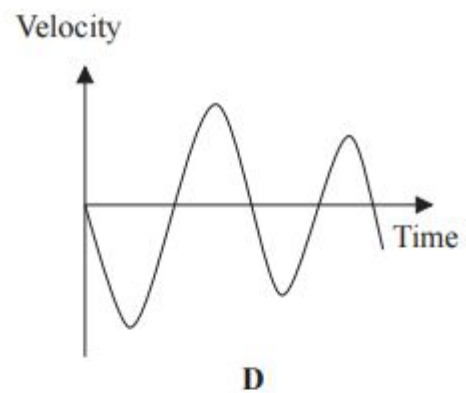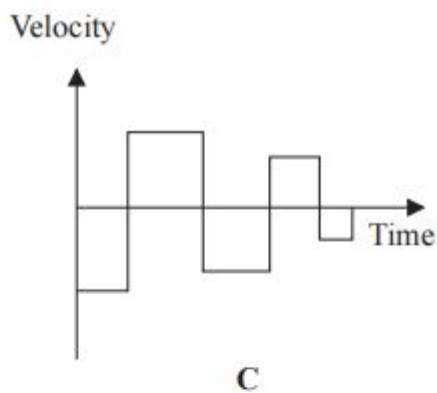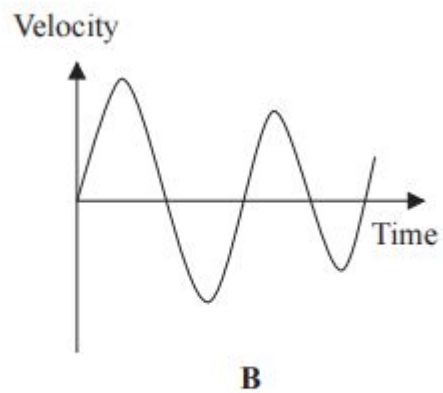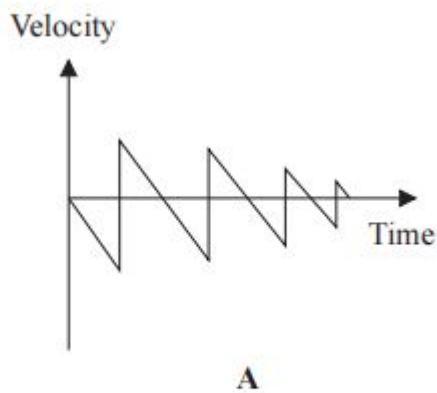
(Total for Question = 1 mark)

2 The velocity-time graph for the runner over the full 12 s is v

⊠ A

⊠ B

⊠ C

⊠ D

(Total for Question = 1 mark)

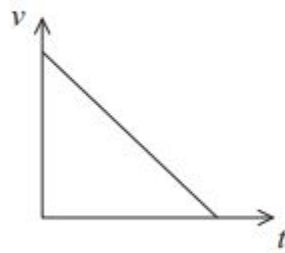**3** Which of the following graphs could be the velocity-time graph for the ball?

⊠ A

⊠ B

⊠ C

⊠ D

(Total for Question = 1 mark)

4 A ball is rolled along a horizontal surface. Frictional forces slow the ball to rest.

The velocity-time graph for the ball is shown.

Select the row of the table that correctly gives the corresponding displacement-time and acceleration-time graphs for the ball.

|	Displacement-time graph	Acceleration-time graph
☒ A		
☒ B		
☒ C		
☒ D		

(Total for Question = 1 mark)

5 Displacement can be found from the

☒   **A** area under a distance-time graph.

☒   **B** area under a velocity-time graph.

☒   **C** gradient of a distance-time graph.

☒   **D** gradient of a velocity-time graph.

     (Total for Question = 1 mark)

Use the following graph to answer Questions 8 and 9

The graph shows how velocity varies with time for an object
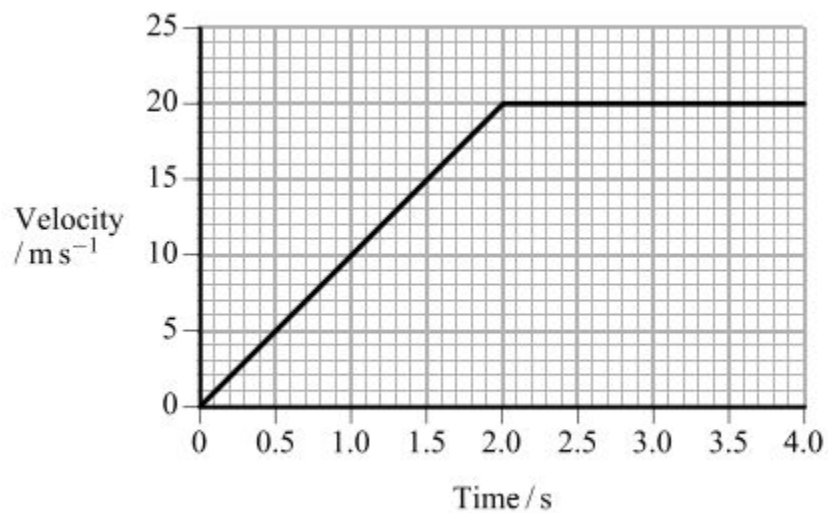
8 The total distance travelled by the object in 4 s is

☒   **A** 20 m

☒   **B** 40 m

☒   **C** 60 m

☒   **D** 80 m

     (Total for Question = 1 mark)

9 The acceleration at 3 s is

☐   **A** $10 \, \mathrm{m\,s^{-2}}$

☐   **B** $7 \, \mathrm{m\,s^{-2}}$

☐   **C** $5 \, \mathrm{m\,s^{-2}}$

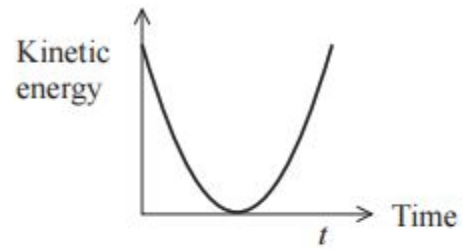☐   **D** $0 \, \mathrm{m\,s^{-2}}$

     (Total for Question = 1 mark)

10 A ball is thrown vertically upwards. It reaches a maximum height, moves downwards and is caught by the thrower at a time t.
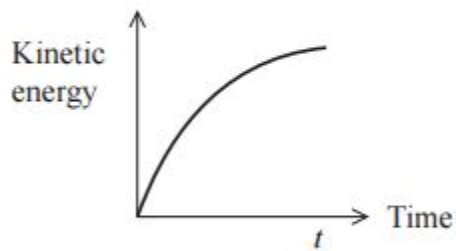
Which of the following is the kinetic energy-time graph for the ball?
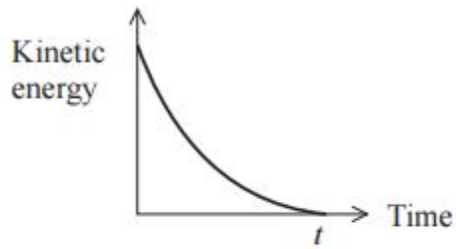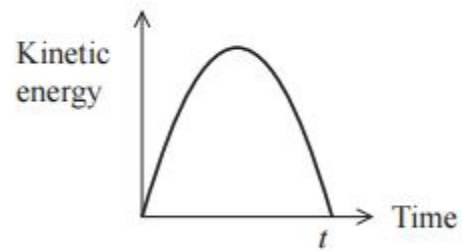
A

B

C

D

☒ A

☒ B

☒ C

☒ D

(Total for Question = 1 mark)

Use the following graph to answer Questions 11 and 12

The velocity-time graph for an object is shown.

Time / s
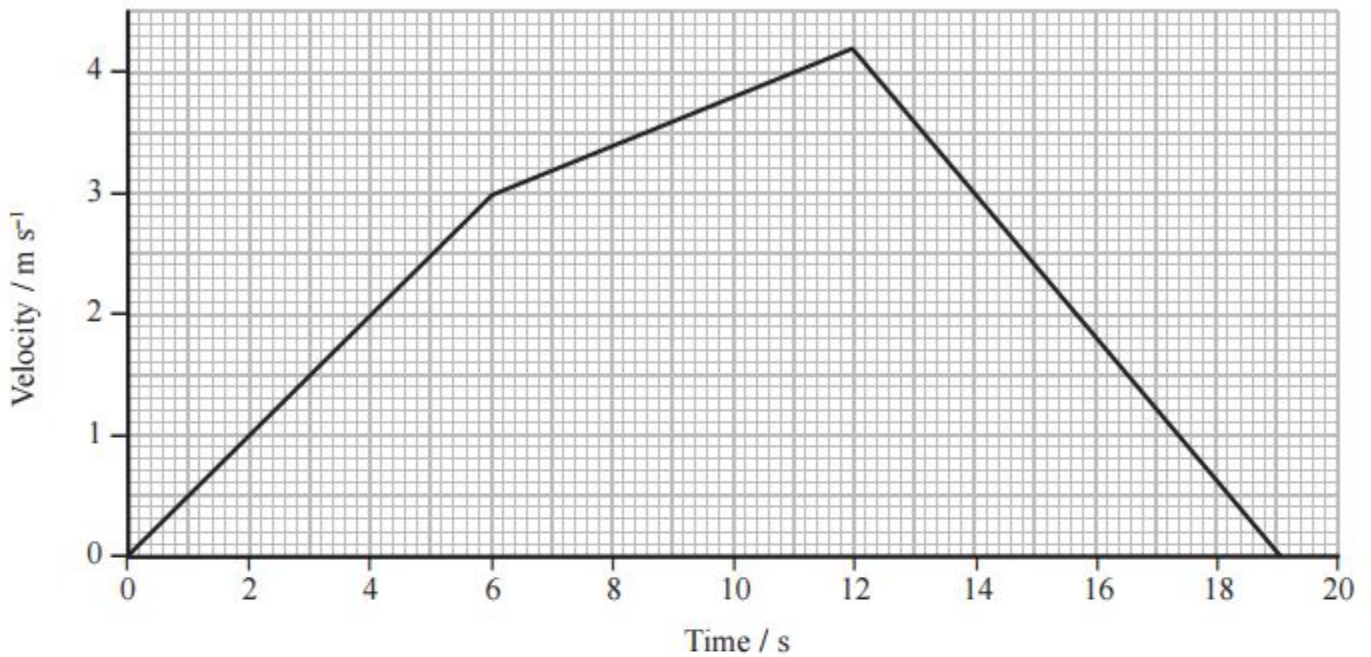
11 The initial acceleration of the object is

☒ A 0.40 m s⁻²

☒ B 0.50 m s⁻²

☒ C 2.0 m s⁻²

☒ D 9.0 m s⁻²

(Total for Question = 1 mark)

12 The displacement of the object during the time of deceleration is

☒ A 29 m

☒ B −29 m

☒ C 15 m

☒ D −15 m

(Total for Question = 1 mark)

13 The acceleration of free fall on a particular planet is 8.0 m s^{-2}. An object is dropped from a height and hits the ground after 1.5 s. From what height was it dropped?

☐   **A** 6.0 m

☐   **B** 9.0 m

☐   **C** 11 m

☒   **D** 12 m

(Total for Question 10 = 1 mark)

14 Acceleration can be found from the

☒   **A** area under a distance-time graph.

☒   **B** area under a velocity-time graph.

☒   **C** gradient of a distance-time graph.

☒   **D** gradient of a velocity-time graph.

(Total for Question = 1 mark)

15 Velocity can be found from the

☒   **A** area under a displacement-time graph

☒   **B** area under a force-time graph

☒   **C** gradient of a displacement-time graph

☒   **D** gradient of an acceleration-time graph

(Total for Question = 1 mark)