

Motion Graphs

Question Paper

Level	A Level
Subject	Physics
Exam Board	Edexcel
Topic	Mechanics
Sub Topic	Motion Graphs
Booklet	Question Paper
Paper Type	Multiple Choice

Time Allowed: 18 minutes

Score: /15

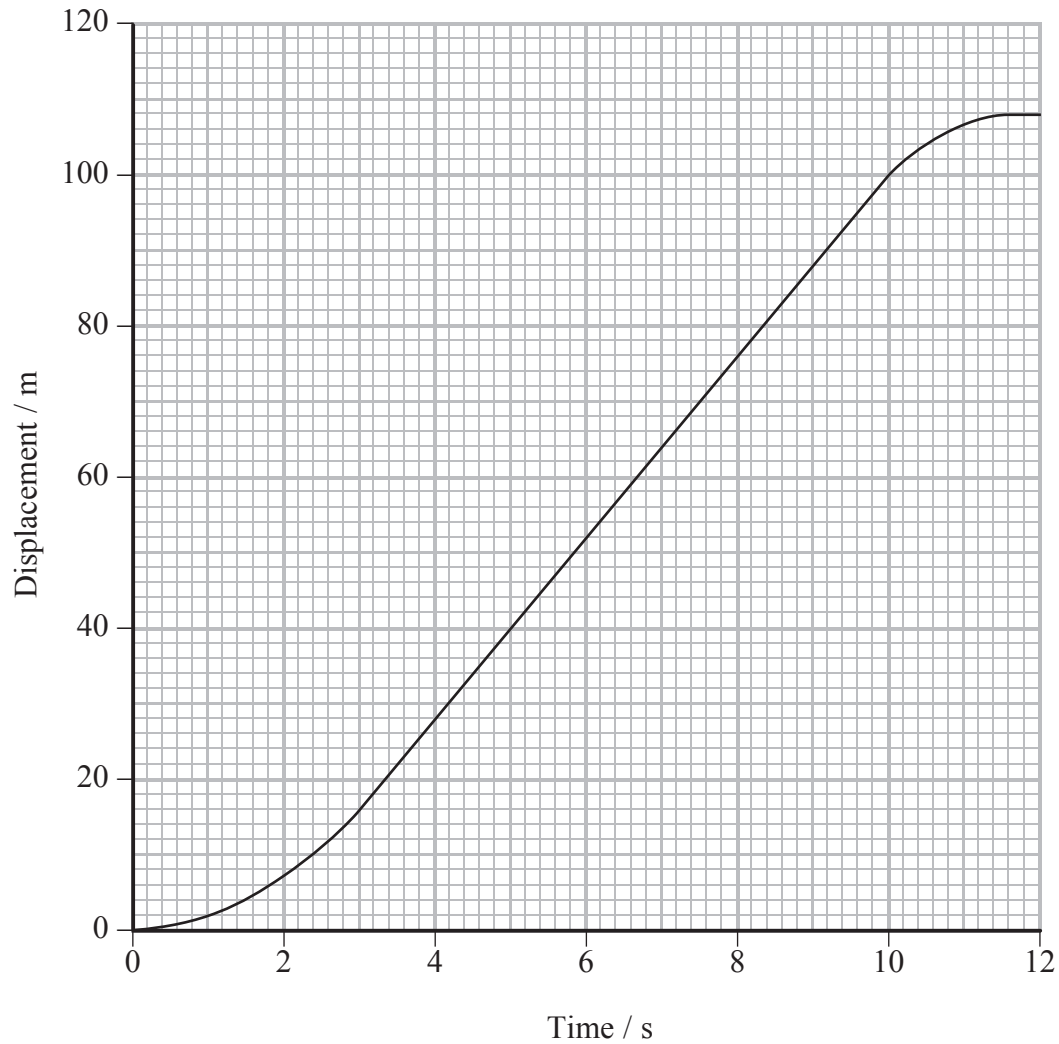
Percentage: /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	'77.5%	70%	62.5%	57.5%	45%	<45%

Questions 1 and 2 refer to the graph below.

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

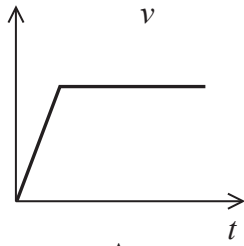


1 The velocity of the runner at 5 s is approximately

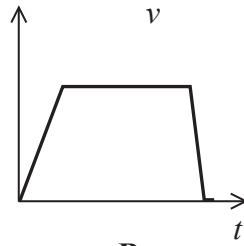
- A 8 m s^{-1}
- B 9 m s^{-1}
- C 12 m s^{-1}
- D 40 m s^{-1}

(Total for Question = 1 mark)

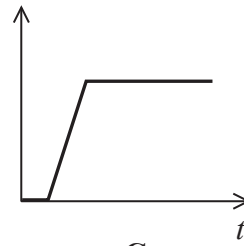
2 The velocity-time graph for the runner over the full 12 s is v



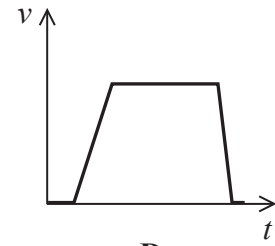
A



B



C



D

A

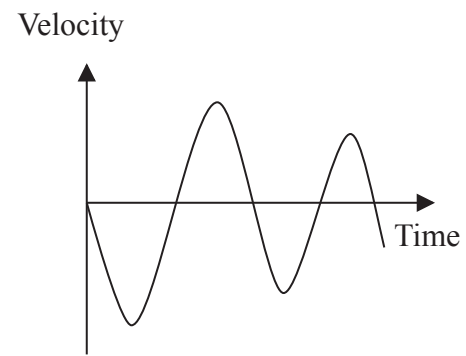
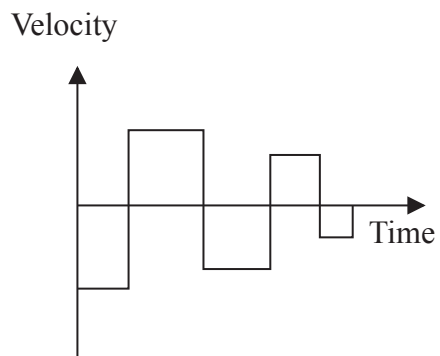
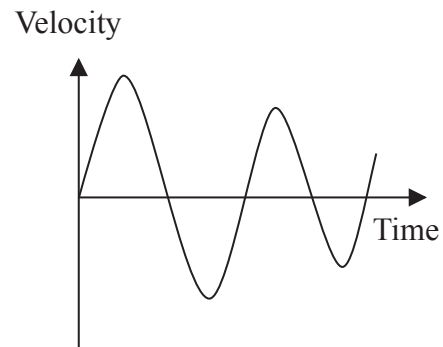
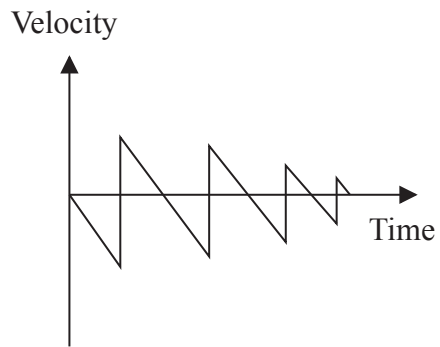
B

C

D

(Total for Question = 1 mark)

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

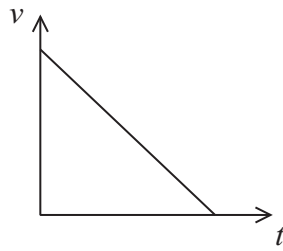


- A
- B
- C
- D

(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
<input checked="" type="checkbox"/> A		
<input checked="" type="checkbox"/> B		
<input checked="" type="checkbox"/> C		
<input checked="" type="checkbox"/> 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)

6 Protactinium has a half-life of 70 s. A sample of protactinium is prepared and monitored over a period of time. Which of the following statements is correct?

- A The activity of the protactinium will be zero after 140 s.
- B The activity of the protactinium will be 25% of its initial value after 140 s.
- C The activity of the protactinium will be 12.5% of its initial value after 280 s.
- D The activity of the protactinium will never become zero.

(Total for Question = 1 mark)

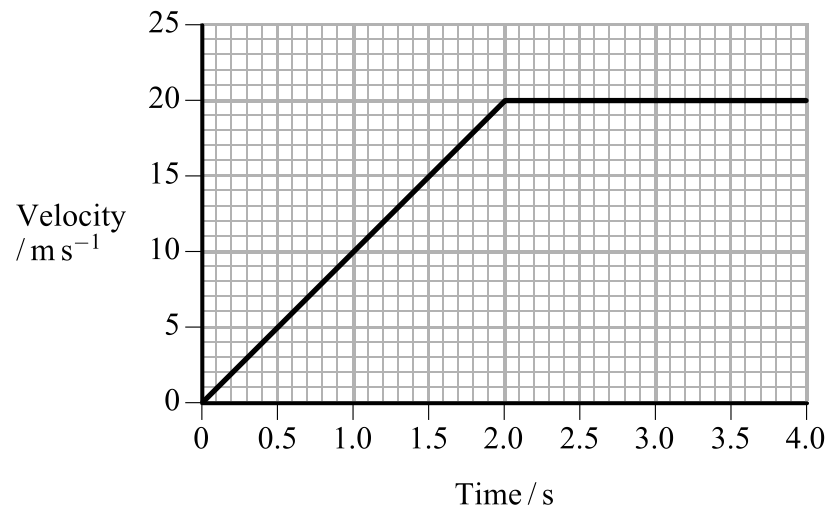
7 In which of the following situations would a blue shift be observed?

- A Source and observer moving with the same velocity.
- B Source moving along a circular path around an observer.
- C Source moving away from a stationary observer.
- D Source moving towards a stationary observer.

(Total for Question = 1 mark)

Use the following graph to answer Questions 11 and 12

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)

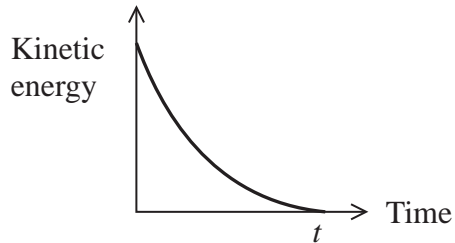
9 The acceleration at 3 s is

- A 10 m s^{-2}
- B 7 m s^{-2}
- C 5 m s^{-2}
- D 0 m s^{-2}

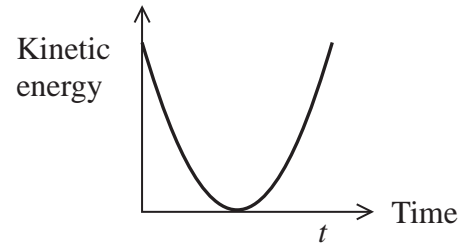
(Total for Question = 1 mark)

- 10 A ball is thrown vertically upwards. It reaches a maximum height, moves downwards and is caught by the thrower at a time t .

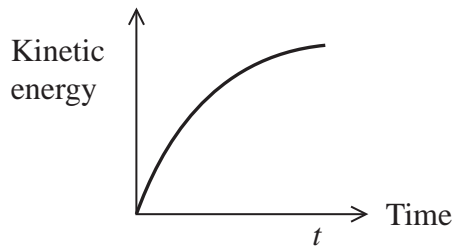
Which of the following is the kinetic energy-time graph for the ball?



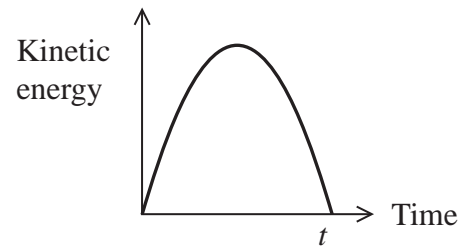
A



B



C



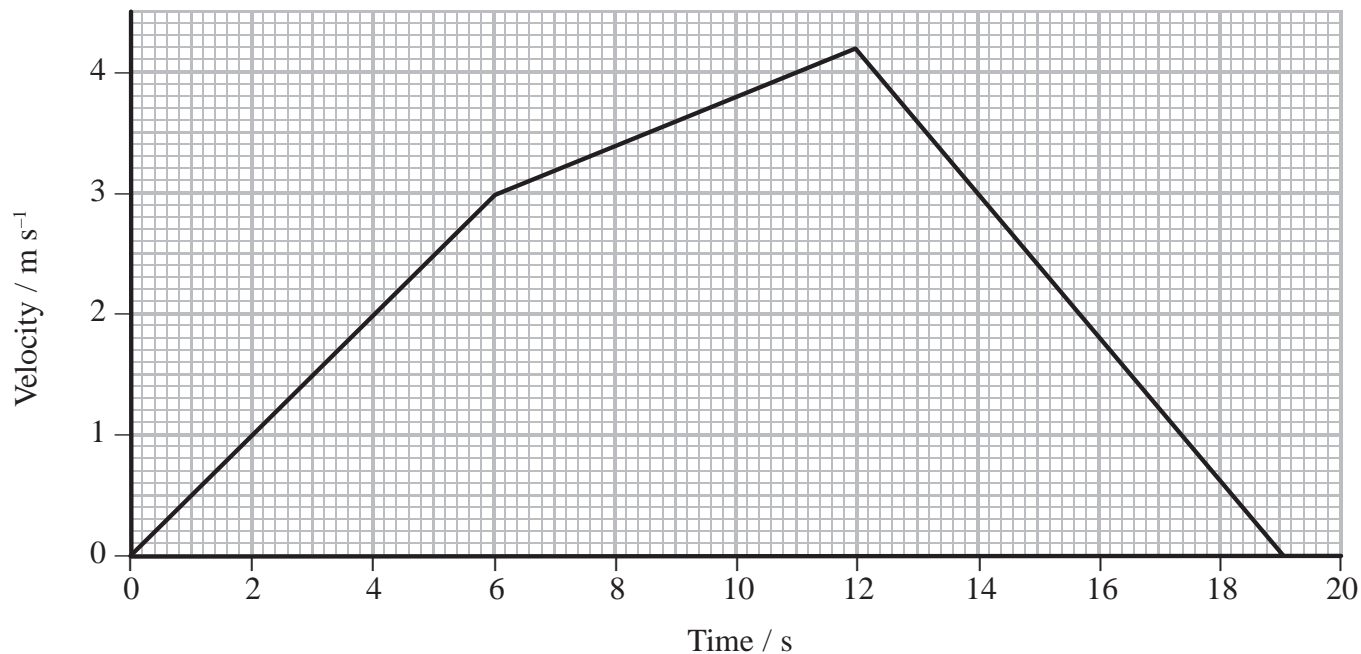
D

- A
- B
- C
- D

(Total for Question = 1 mark)

Questions 14 and 15 refer to the graph below.

The velocity-time graph for an object is shown.



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)