**Quiz A1.1**

Kinematics

1   Cars X and Y start from the same place. They are both travelling to a destination 480 km away.
Car X starts at time 0 and has speed 60 km hr^{-1}.
Car Y starts one hour later and travels at 80 km hr^{-1}.
Which car gets to the destination first, and what is the time between the arrivals of the two cars at the destination?

	Arrives first	Time between arrivals /hrs
A	X	1
B	X	2
C	Y	1
D	Y	2

2   The initial velocity of a body is 6.0 m s^{-1}. The graph shows the variation with time of the acceleration of the body.
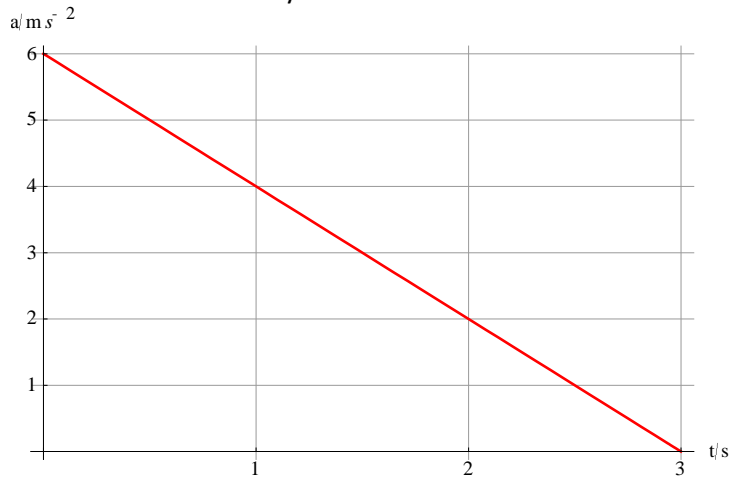
What is the velocity at t = 3 s?

A 9.0 m s^{-1} **B** 15 m s^{-1} **C** 18 m s^{-1} **D** 24 m s^{-1}

**3** The initial position of a body is 4.0 m. The graph shows the variation with time of the velocity of the body.


What is the position of the body at t = 6 s?

A 12 m   **B** 16 m   **C** 20 m   **D** 24 m

4 A stone is thrown vertically upwards with speed 20 m s⁻¹. How high does it get?

A 2 m   **B** 20 m   **C** 40 m   **D** 80 m

5 A car accelerates uniformly from 15 m s⁻¹ to 27 m s⁻¹ in 4.0 s. What is the distance covered?

A 48 m   **B** 60 m   **C** 84 m   **D** 168 m

6 A stone is thrown vertically downwards from the edge of cliff on a planet without an atmosphere at t = 0. At t = 1 s the speed is 11 m s⁻¹ and at t = 3 s it is 23 m s⁻¹. What is the initial speed of the stone and what is the acceleration of free fall on the planet?

	Initial speed / m s⁻¹	Acceleration of free fall / m s⁻²
A	5	6
B	5	7
C	4	6
D	4	7

7 The velocity of an object varies with time as shown in the graph.
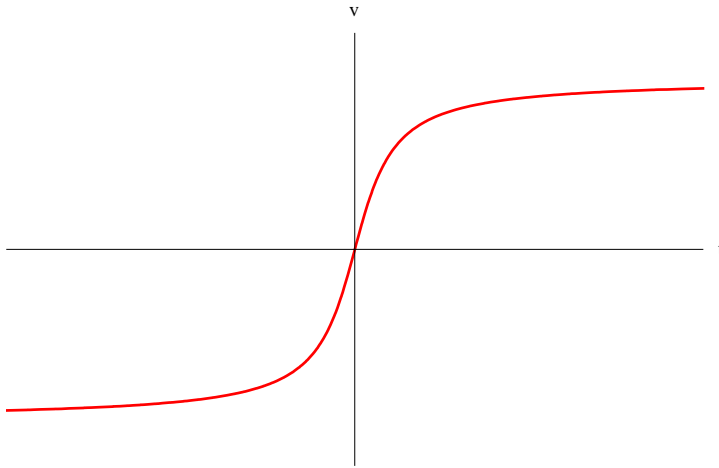
Which graph shows the variation with time of the acceleration of the object?

A

B

C

D
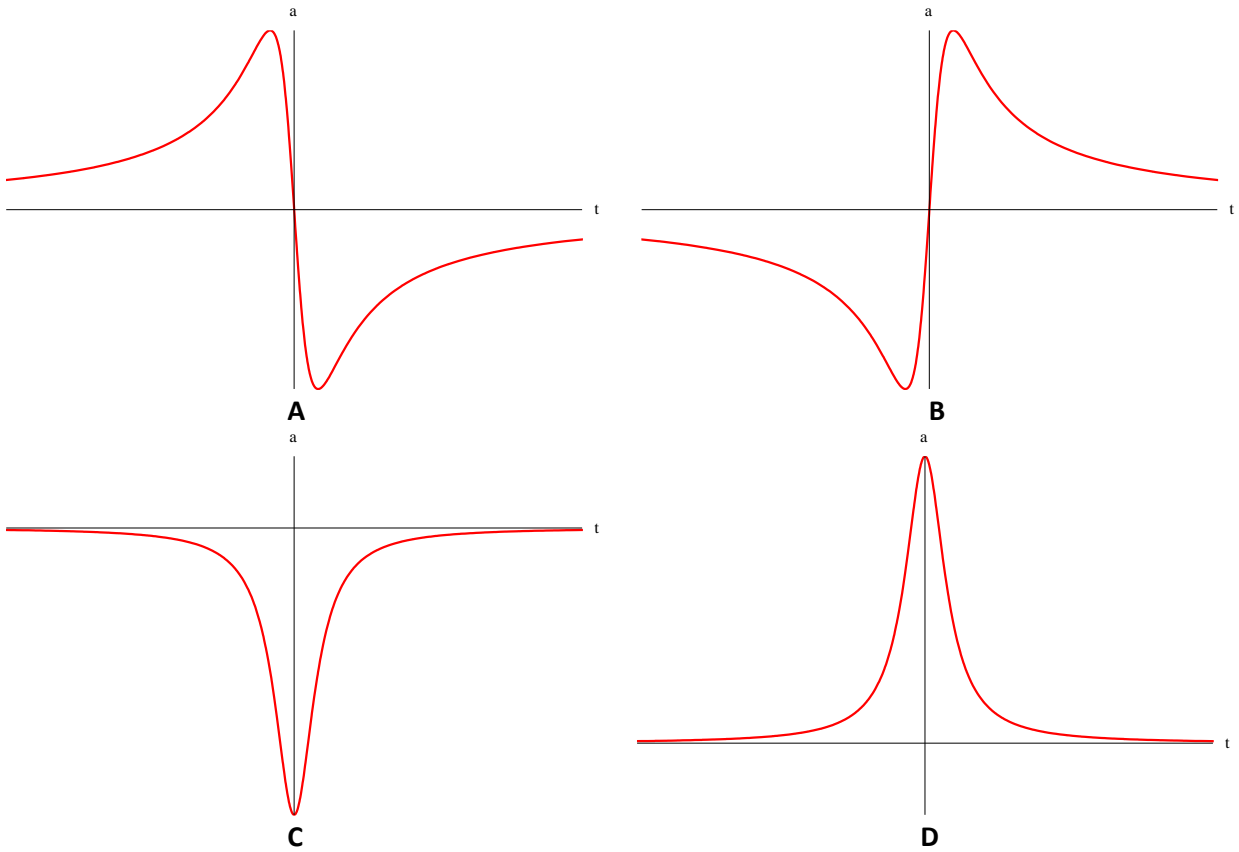
8 A car starting from rest at $t = 0$ moves with constant acceleration. After travelling a distance d, the speed becomes v and the time is $t = T$. What was the distance traveled and what was the speed when the time was $t = \dfrac{T}{2}$?

	Distance	Speed
A	$\dfrac{d}{4}$	$\dfrac{v}{2}$
B	$\dfrac{d}{4}$	$\dfrac{v}{4}$
C	$\dfrac{d}{2}$	$\dfrac{v}{2}$
D	$\dfrac{d}{2}$	$\dfrac{v}{4}$

9 An object is thrown vertically upwards. At $t = 1$ s and $t = 5$ s the object is at the same height. What is the maximum height attained?

A 10 m   **B** 20 m   **C** 30 m   **D** 45 m

10 A ball is released from a hot air balloon when at a height 75 m from the ground. The balloon was rising at speed 10 m s^{-1} when the ball was released. Air resistance on the ball is neglected.
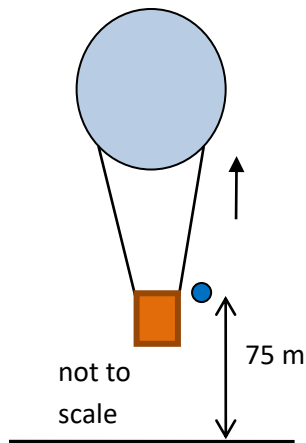
After what time does the ball reach the ground?

A 8 s   **B** 6 s   **C** 5 s   **D** 4 s

Answers Quiz A1.1	
1	C
2	B
3	B
4	B
5	C
6	A
7	D
8	A
9	D
10	C