

- 5 A car has an initial velocity u . The car then moves with constant acceleration a in a straight line through a displacement d . The car reaches a final velocity v .

Which expression gives the initial velocity u of the car?

- A** $v - ad$ **B** $\sqrt{v^2 - 2ad}$ **C** $v + ad$ **D** $v - \frac{1}{2}ad^2$

A-Level Physics: s25 11

- 5 A ball is projected vertically downwards with an initial velocity of 20 ms^{-1} . Air resistance is negligible.

What is the displacement from its initial position of the ball after a time of 1.5 s ?

- A** 11 m **B** 19 m **C** 37 m **D** 41 m

- 6 A surveyor's device emits a pulse of light. The light is reflected from a wall 150 m away.

What is the total time taken for the pulse to travel from the device to the wall and then back to the device?

- A** 0.05 ns **B** 0.10 ns **C** 0.50 μs **D** 1.0 μs

A-Level Physics: s25 14

- 6 A ball is released from rest from a window at a height of 12 m above the ground. Air resistance is negligible.

What is the time taken after release for the ball to reach the ground?

- A** 1.1 s **B** 1.2 s **C** 1.6 s **D** 2.4 s

A-Level Physics: m25 12

- 4 An aircraft, initially stationary on a runway, takes off with a speed of 85 kmh^{-1} in a distance of no more than 1.20 km.

What is the minimum constant acceleration necessary for the aircraft?

- A** 0.23 ms^{-2} **B** 0.46 ms^{-2} **C** 3.0 ms^{-2} **D** 6.0 ms^{-2}