



Objective

- Apply the constant acceleration equations (SUVAT).

Key Facts

SUVAT EQUATIONS

VARIABLE	QUANTITY
s	displacement
u	initial velocity
v	final velocity
a	acceleration
t	time

$$v = u + at$$

$$s = \frac{1}{2}(u + v)t$$

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

$$s = vt - \frac{1}{2}at^2$$

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

Examples

3.2e. A van accelerates uniformly from 13 ms^{-1} to 30 ms^{-1} in 6 seconds.

- (a) Calculate the acceleration of the van.

- (b) Find the distance travelled by the van in the first 4 seconds.

3.2p. A scooter decelerates uniformly from 28 ms^{-1} to 17 ms^{-1} , covering a distance of 240 m.

- (a) Calculate the magnitude of the deceleration.

- (b) The scooter continues to decelerate uniformly. Calculate the velocity of the scooter after 21 s.

Given that the ball decelerates at 0.6 ms^{-2} , determine the minimum initial velocity of the ball if it is to reach the top of the hill.