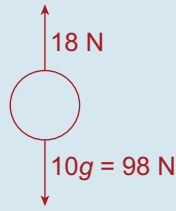


Q. 9. (a) $F = 98 - 18$
 $= 80 \text{ N}$

$F = ma$

$\Rightarrow 80 = 10(a)$

$\Rightarrow a = 8 \text{ m/s}^2$



(b) (i) $u = 0, a = 8, t = 10, s = ?$

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

$\Rightarrow s = 0(10) + \frac{1}{2}(8)(100)$

$= 400 \text{ m}$

(ii) $u = 0, a = 8, t = 20, s = ?$

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

$\Rightarrow s = (0)(20) + \frac{1}{2}(8)(400)$

$= 1,600 \text{ m}$

$\therefore \text{Distance} = 1,600 - 400$

$= 1,200 \text{ m}$

Q. 10. $u = 300, v = 200, s = 0.1, a = ?$

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

$\Rightarrow 40,000 = 90,000 + 2(a)(0.1)$

$\Rightarrow a = -250,000$

$F = ma$

$\Rightarrow -25,000 = m(-250,000)$

$\Rightarrow m = 0.1 \text{ kg}$

$= 100 \text{ grammes}$

$u = 300, v = 0, a = -250,000,$
 $s = ?$

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

$0 = 90,000 + 2(-250,000)s$

$\Rightarrow s = 0.18 \text{ m}$

$= 18 \text{ cm}$

Q. 11. $u = u, v = 0, s = s, a = ?$

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

$\Rightarrow 0 = u^2 + 2as$

$\Rightarrow a = \frac{-u^2}{2s}$

$F = ma$

$\Rightarrow R = m\left(\frac{-u^2}{2s}\right)$

$= \frac{-mu^2}{2s}$

$v = u + at$

$\Rightarrow 3u = 2u - \frac{u^2}{2s}t$

$\Rightarrow t = \frac{2s}{u}$

$u = 3u, s = 5s, a = \frac{-u^2}{2s}, v = ?$

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

$\Rightarrow v^2 = 9u^2 + 2\left(\frac{-u^2}{2s}\right)(5s)$

$\Rightarrow v^2 = 9u^2 - 5u^2 = 4u^2$

$\Rightarrow v = 2u \text{ m/s}$

$v = u + at \Rightarrow 3u = 2u - \frac{u^2}{2s}t \Rightarrow t = \frac{2s}{u}$

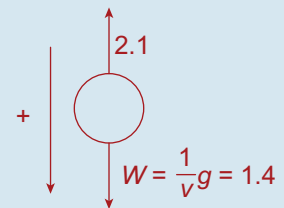
Q. 12. $F = 1.4 - 2.1$

$= -0.7 \text{ N}$

$F = ma$

$\Rightarrow -0.7 = \left(\frac{1}{7}\right)a$

$\Rightarrow a = -4.9 \text{ m/s}^2$



$u = 1.4, a = -4.9, v = 0, s = ?$

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

$\Rightarrow 0 = 1.96 + 2(-4.9)s$

$\Rightarrow s = 0.2 \text{ m}$

$= 20 \text{ cm}$

Q. 13. In Air

$u = 0, a = 9.8, s = 2.5, v = ?$

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

$\Rightarrow v^2 = 0 + 2(9.8)(2.5)$

$= 49$

$\Rightarrow v = 7 \text{ m/s}$

In Material

$u = 7, v = 0, s = 0.35, a = ?$

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

$\Rightarrow 0 = 49 + 2(a)(0.35)$

$\Rightarrow a = -70 \text{ m/s}^2$

