

4 Mechanics 1 – Part 1 — Answers

Answers

4.1 They are balanced — their vector sum (the resultant) is zero.

4.2 $W = mg = 12 \times 10 = 120 \text{ N}$.

4.3 $v = u + at = 0 + 3(6) = 18 \text{ m s}^{-1}$.

4.4 $s = ut + \frac{1}{2}at^2 = 0 + \frac{1}{2}(3)(6^2) = 54 \text{ m}$.

4.5 $F_{\max} = \mu R = 0.3 \times 20 = 6 \text{ N}$.

4.6 At the highest point $v = 0$. Using $v^2 = u^2 - 2gs$ (upward positive): $0 = 20^2 - 2(10)s$, so $20s = 400$ and $s = 20 \text{ m}$.