

Solutions

Each answer shows the steps, then the **result**.

2.1

- $a = \frac{F}{m} = \frac{18}{3} = 6 \text{ m s}^{-2}$

2.2

- $W = mg = 7 \times 10 = 70 \text{ N}$

3.1 B

- $a = \frac{20}{5} = 4 \text{ m s}^{-2}$

3.2

(a)

- along the slope: $mg \sin 30^\circ = ma \Rightarrow a = g \sin 30^\circ = 10(0.5) = 5 \text{ m s}^{-2}$

(b)

- $v^2 = u^2 + 2as = 0 + 2(5)(5) = 50 \Rightarrow v = 7.07 \text{ m s}^{-1}$

3.3

(a)

- for the system, $5g - 3g = (5 + 3)a$; $20 = 8a \Rightarrow a = 2.5 \text{ m s}^{-2}$

(b)

- for the 3 kg mass: $T - 3g = 3a \Rightarrow T = 30 + 3(2.5) = 37.5 \text{ N}$