

Solutions

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

2.1

- $\text{moment} = 20 \times 3 = 60 \text{ N m}$

2.2

- the resultant force is zero; the resultant moment about any point is zero

3.1 B

- $\text{Moment} = \text{force} \times \text{perpendicular distance}$

3.2

(a)

- wall reaction S is horizontal at B ; weight 200 N acts at the midpoint (3 m along).
Moments about A : $S \times 6 \sin 60^\circ = 200 \times 3 \cos 60^\circ$; $S \times 5.196 = 300 \Rightarrow S = 57.7 \text{ N}$

(b)

- horizontal equilibrium: $\text{friction} = S = 57.7 \text{ N}$

3.3

- moments about A : $R_C \times 1.5 = 40 \times 1 \Rightarrow R_C = 26.7 \text{ N}$; vertical: $R_A + R_C = 40 \Rightarrow R_A = 13.3 \text{ N}$