

Solutions

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

2.1

- $\tau = 30 \times 0.80 = 24 \text{ N m}$

2.2

- 90° (perpendicular)

2.3

- $\tau = rF \sin \theta = 0.60 \times 40 \times \sin 30^\circ = 12 \text{ N m}$

2.4

- A longer arm is a larger lever arm r , so the same force produces a bigger torque
 $\tau = rF$

3.1 C

3.2 B

- $\tau = 10 \times 0.20 = 2.0 \text{ N m}$

3.3

(a)

- $\tau = 300 \times 1.5 = 450 \text{ N m}$

(b)

- balance needs equal torque: $450 \times d = 450 \Rightarrow d = 1.0 \text{ m}$ from the pivot