SOLUTIONS TO TUTORIAL EXAMPLES

CHAPTER 8

Remember:

Clockwise moments are positive (+).
Anti-clockwise moments are negative (−).

Question 1

Moment M = +(30 kN × 3 m) = +90 kNm.

Question 2

Moment M = − (10 kN × 4 m) = −40 kNm.

Question 3

Moment M = +(10 kN × 5 m) + (45 kN × 0 m) + (60 kN × 0 m) = +50 kNm.

Note that the 60 kN force and the 45 kN force (if extended) pass straight through point A (which is the point about which moments are being taken), so the moment of each of these forces about point A is zero.

Question 4

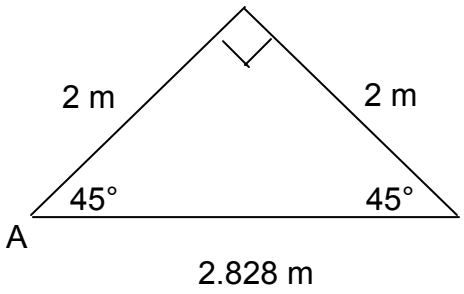
Moment M = +(30 kN × 3 m) + (10 kN × 2 m) − (5 kN × 4 m)
= +90 + 20 − 20
= +90 kNm.

Question 5

The vertical component of the 14 kN force is (14 sin 45°) = 9.9 kN.

Moment M = +(9.9 kN × 2.828 m) − (9 kN × 3 m)
= 28 − 27
= 1 kNm.

Alternatively, the same answer can be reached if you recognise that the perpendicular distance between A and the 14 kN force is (2.828 × sin 45°) = 2 m. See diagram below.



Moment M = +(14 kN × 2 m) − (9 kN × 3 m)
= +28 − 27
= +1 kNm.

Question 6

Moment M = +(6 kN × 3 m) + (7 kN × 5 m) + (5 kN × 2 m)
= +18 + 35 + 10
= +63 kNm.