



Find the support reaction components at the **fixed** support *A* if the forces above are acting on the cantilevered beam. Assume the mass of the beam is negligible, that reaction force component vectors point upward and right ( - components if force is exerted in the other direction) and that counterclockwise moments are positive.

$$\Sigma F_x = 0 \rightarrow A_x + 4 \text{ kN} \cos(30^\circ) = 0 \rightarrow A_x = -4 \text{ kN} \cos(30^\circ) = -3.46 \text{ kN}$$

$$\Sigma F_y = 0 \rightarrow A_y - 6 \text{ kN} - 4 \text{ kN} \sin(30^\circ) = 0 \rightarrow A_y = 6 \text{ kN} + 4 \text{ kN} \sin(30^\circ) = 8 \text{ kN}$$

$$\Sigma (M_{System})_A = 0 \rightarrow M_A - (1.5 \text{ m})(6 \text{ kN}) - (3 \text{ m} + 1.5 \text{ m} \cos(30^\circ))(4 \text{ kN} \sin(30^\circ)) - (1.5 \text{ m} \sin(30^\circ))(4 \text{ kN} \cos(30^\circ)) = 0$$

$$\rightarrow M_A = (1.5 \text{ m})(6 \text{ kN}) + (3 \text{ m} + 1.5 \text{ m} \cos(30^\circ))(4 \text{ kN} \sin(30^\circ)) + (1.5 \text{ m} \sin(30^\circ))(4 \text{ kN} \cos(30^\circ)) = 20.2 \text{ kN}$$