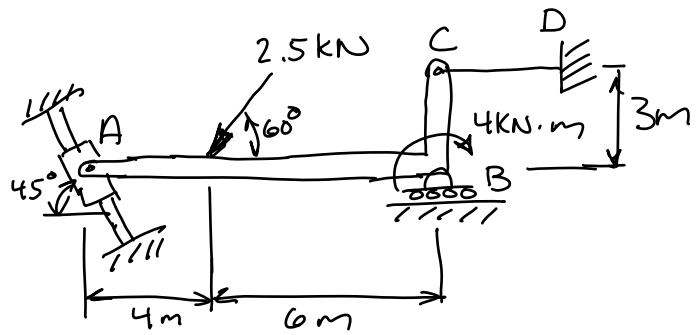
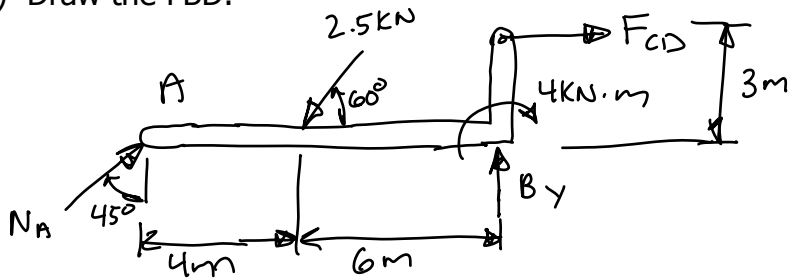


## Support Reactions

**Problem Statement:** Determine the support reactions.



1.) Draw the FBD.



2.) Enforce equilibrium.

$$N_{Ax} = N_A \sin 45^\circ$$

$$N_{Ay} = N_A \cos 45^\circ$$

$$F_{2.5x} = (2.5 \text{ kN}) \cos 60^\circ = -1.25 \text{ kN}$$

$$F_{2.5y} = -(2.5 \text{ kN}) \sin 60^\circ = -2.165 \text{ kN}$$

$$F_{CDx} = F_{CD}$$

$$F_{CDy} = 0$$

$$B_y = B_y$$

$$\rightarrow \sum F_x = 0 \Rightarrow N_A \sin 45^\circ - 1.25 \text{ kN} + F_{CD} = 0$$

$$+\uparrow \sum F_y = 0 \Rightarrow N_A \cos 45^\circ - 2.165 \text{ kN} + B_y = 0$$

$$\sum M_C = 0$$

$$d_{N_{Ax}} = 3 \text{ m}$$

$$d_{N_{Ay}} = 10 \text{ m}$$

$$d_{F_{2.5x}} = 3 \text{ m}$$

$$d_{2.5y} = 6 \text{ m}$$

$$d_{F_{CDx}} = 0$$

$$d_{B_y} = 0$$

$$+\uparrow \sum M_C = 0 \Rightarrow + (N_A \sin 45^\circ)(3 \text{ m}) - (N_A \cos 45^\circ)(10 \text{ m}) - (1.25 \text{ kN})(3 \text{ m}) + (2.165 \text{ kN})(6 \text{ m}) - 4 \text{ kN}\cdot\text{m}$$

$$N_A = 1.06 \text{ kN}$$

$$F_{CD} = 0.5 \text{ kN}, B_y = 1.42 \text{ kN}$$