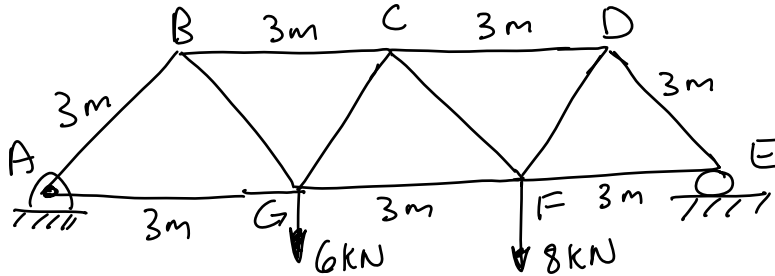
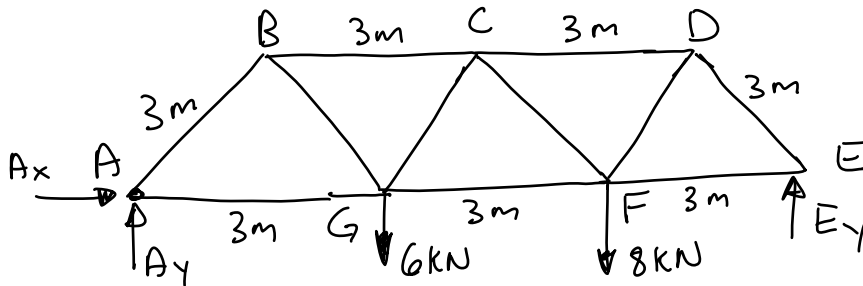


Method of Sections

Problem Statement: Determine the force in each members BC, CG, and FG of the truss, and indicate whether the members are in tension or compression.



1.) Determine the support reactions if possible.



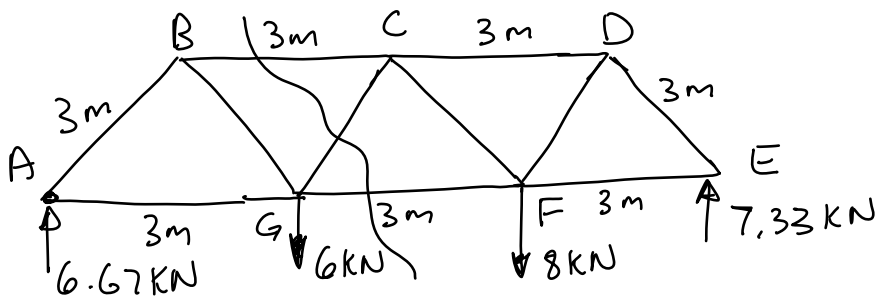
$$\rightarrow \sum F_x = 0 \Rightarrow \boxed{A_x = 0}$$

$$\uparrow \sum F_y = 0 \Rightarrow A_y + E_y - 6\text{ kN} - 8\text{ kN} = 0$$

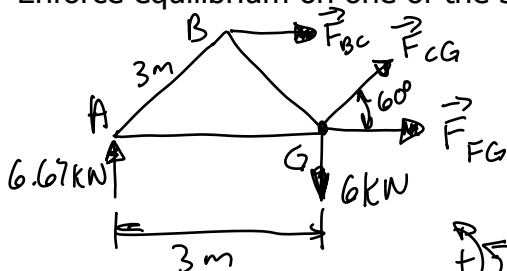
$$\uparrow \sum M_A = 0 \Rightarrow -(6\text{ kN})(3\text{ m}) - (8\text{ kN})(6\text{ m}) + (E_y)(9\text{ m}) = 0$$

$$\boxed{E_y = 7.33\text{ kN}, A_y = 6.67\text{ kN}}$$

2.) Make a cut through the truss members of interest.



3.) Enforce equilibrium on one of the sections.



$$\rightarrow \sum F_x = 0 \Rightarrow F_{CG} \cos 60^\circ + F_{BC} + F_{FG} = 0$$

$$\uparrow \sum F_y = 0 \Rightarrow 6.67\text{ kN} - 6\text{ kN} + F_{CG} \sin 60^\circ = 0$$

$$F_{CG} = -0.77\text{ kN}$$

$$\uparrow \sum M_G = 0 = -F_{BC}(3\text{ m})(\sin 60^\circ) - (6.67\text{ kN})(3\text{ m}) = 0$$

$$F_{BC} = -7.7\text{ kN}, F_{FG} = 8.09\text{ kN}$$

$$F_{CG} = 0.77 \text{ kN}(C), F_{BC} = 7.7 \text{ kN}(C), F_{FG} = 8.09 \text{ kN}(T)$$

4.) Make additional cuts or use the Method of Joints to find the force in additional truss members.

Not needed