FAQ's

1. What is simply supported truss?

If the members of the truss are supported by simple supports, then it is called simply supported truss. Reaction forces are at the simply supported ends.

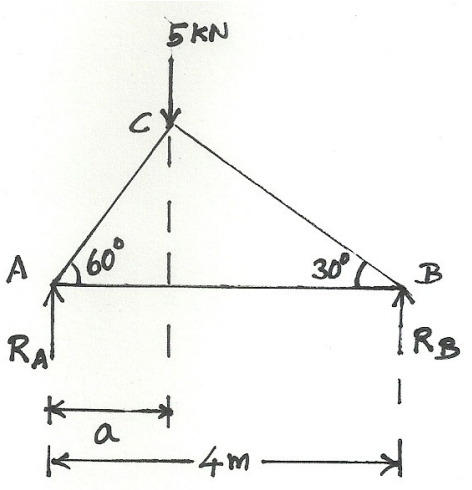
2. What are the conditions of equilibrium used in the method of joints? Why?

The conditions of equilibrium used in the method of joints are, $\sum v = 0$ and $\sum h = 0$. One of the assumption is all the joints are pin jointed, there is no moment. The equilibrium condition $\sum m = 0$ is not used.

3. What are the hints to be followed while analyzing a simply supported truss using method of joints?

- The support reactions are determined first
- The analysis is to be started from the free and where there is a maximum of two unknown forces, using the condition of equilibrium $\sum F_x = 0$ and $\sum F_y = 0$.
- All the members are assumed to be tensile
- Consider tensile forces as positive and compressive as negative
- The force convention is, upward force assigns positive sign and downward force assigns negative sign.

4. Find the forces in the members AC and AB of the truss shown below



Length of the member AC = 4 x $\sin 30^0$ = 2m
Therefore, a = AC x $\cos 60^0$ = 1m

$\sum V = 0$

$R_A + R_B - 5 = 0$

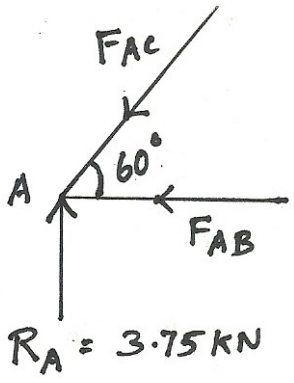
$R_A + R_B = 5$ ----(1)

$\sum M_A = 0$

$5 \times a - R_B \times 4 = 0$

$R_B = 1.25$ kN

From (1), $R_A = 3.75$ kN



Joint 'A'

$\sum V = 0$

$R_A + F_{AC} \times \sin 60^0 = 0$

$F_{AC} = 3.75 / \sin 60^0$

$F_{AC} = 4.33$ kN (Compressive)

$\sum H = 0$

$-F_{AB} - F_{AC} \times \cos 60^0 = 0$

$F_{AB} = -2.165$ kN (Compressive)

Therefore, $F_{AB} = 2.165$ kN (Tensile)