

# Mechanics Presentation (Group 2)



## Equilibrium

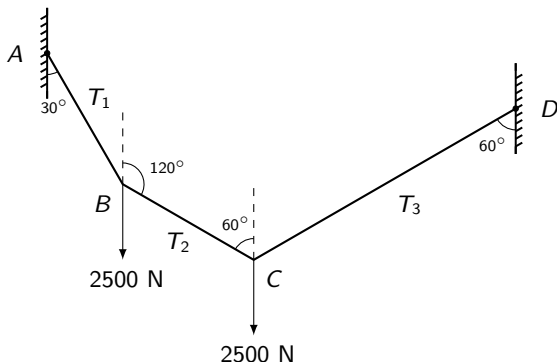
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**Enrollment Numbers:**

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## Numericals

Two equal loads of 2500 N are supported by a flexible string  $ABCD$  at points  $B$  and  $C$ . Find the tensions in the portions  $AB$ ,  $BC$  and  $CD$  of the string.



# Numericals

Applying equations of equilibrium at point  $B$ ,

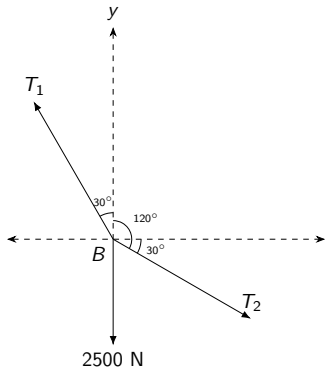
$$\boxed{\Sigma F_x = 0}$$

$$-T_1 \sin 30^\circ + T_2 \cos 30^\circ = 0$$

$$T_1 = \frac{T_2 \cos 30^\circ}{\sin 30^\circ} \quad (1)$$

$$\boxed{\Sigma F_y = 0}$$

$$T_1 \cos 30^\circ - 2500 - T_2 \sin 30^\circ = 0 \quad (2)$$



## Numericals

Substituting for  $T_1$ , we get:

$$T_2 \left( \frac{\cos 30^\circ}{\sin 30^\circ} \right) \cos 30^\circ - T_2 \sin 30^\circ = 2500$$

$$T_2 = 2500$$

$$T_1 = \frac{T_1 \cos 30^\circ}{\sin 30^\circ} = \frac{2500 \times 0.866}{0.5}$$

$$T_1 = 4330N$$

$$T_1 = 4330N$$

$$T_2 = 2500N$$

## Numericals

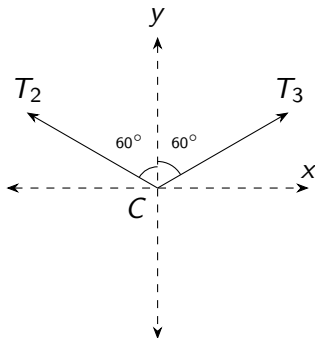
Applying equations of equilibrium at point C,

$$\boxed{\Sigma F_x = 0}$$

$$-T_2 \cos 30^\circ + T_3 \cos 30^\circ = 0$$

$$T_3 = T_2$$

$$\boxed{T_3 = 2500\text{N}}$$



End

Thank you for listening.