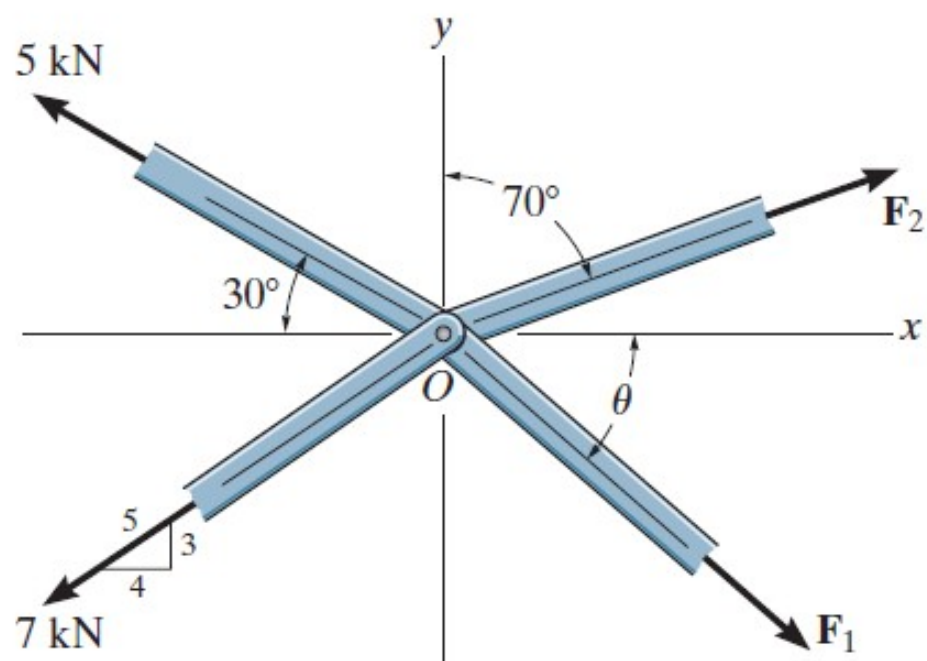
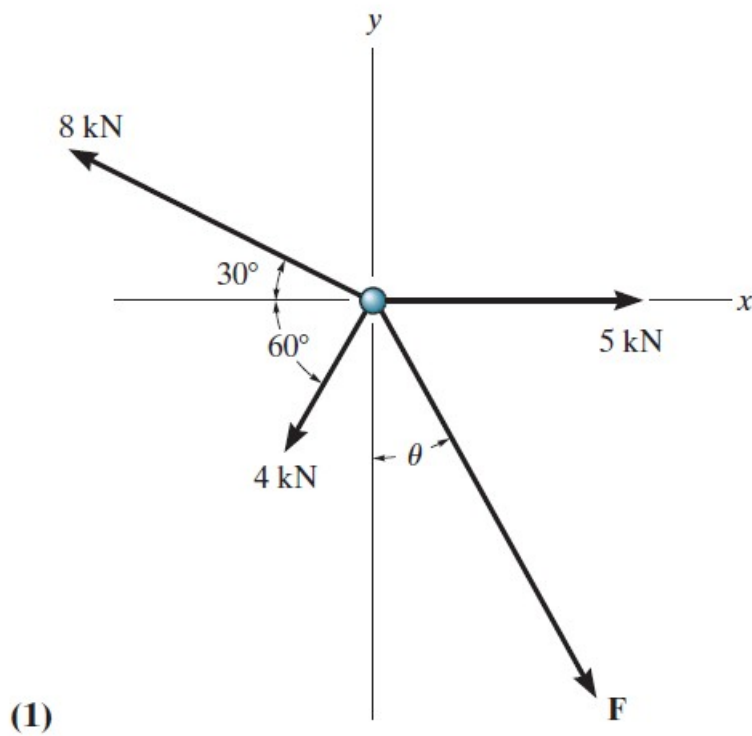


Mecânica Técnica

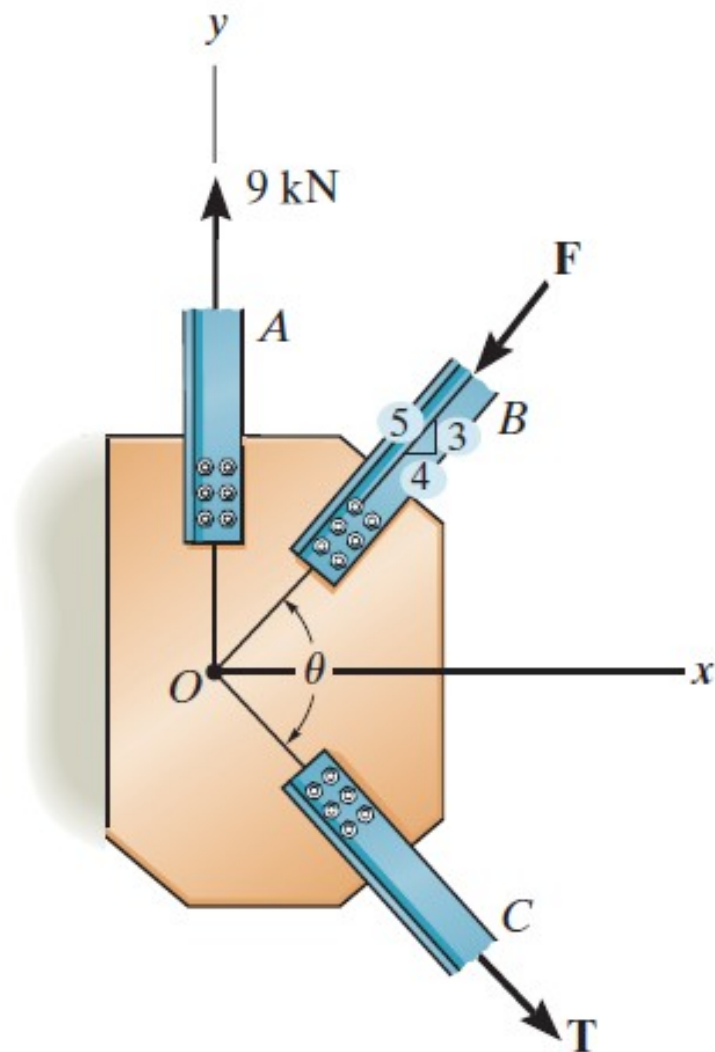
O ângulo θ é 60° , determine F_1 e F_2 para o equilíbrio



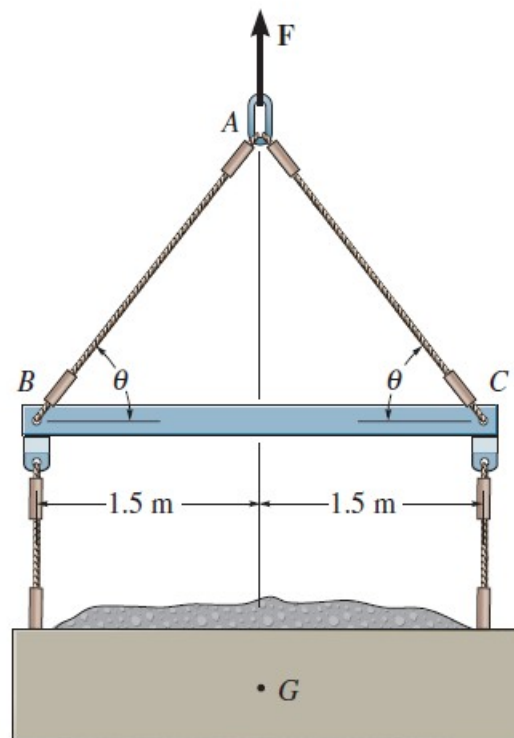
Determine θ e F para o equilíbrio



Determine F e T para o equilíbrio, $\theta = 90^\circ$



O peso tem massa de 500 kg, Determine a força em cada cabo em função de θ
O máximo de força permitida em cada cabo é 5kN, determine o menor tamanho dos
Cabos ab e ac



SOLUTION

Free-Body Diagram: By observation, the force $\mathbf{F}_1$ has to support the entire weight of the container. Thus, $F_1 = 500(9.81) = 4905 \text{ N}$.

Equations of Equilibrium:

$$\rightarrow \Sigma F_x = 0; \quad F_{AC} \cos \theta - F_{AB} \cos \theta = 0 \quad F_{AC} = F_{AB} = F$$

$$+ \uparrow \Sigma F_y = 0; \quad 4905 - 2F \sin \theta = 0 \quad F = \{2452.5 \cos \theta\} \text{ N}$$

Thus,

$$F_{AC} = F_{AB} = F = \{2.45 \cos \theta\} \text{ kN}$$

Ans.

If the maximum allowable tension in the cable is 5 kN, then

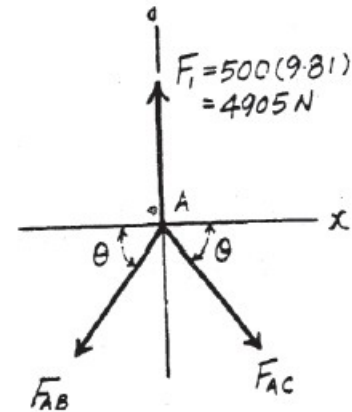
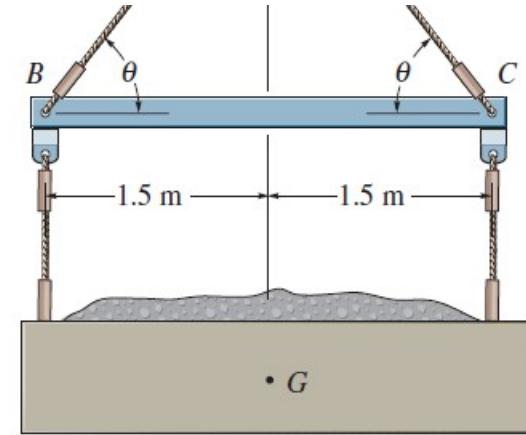
$$2452.5 \cos \theta = 5000$$

$$\theta = 29.37^\circ$$

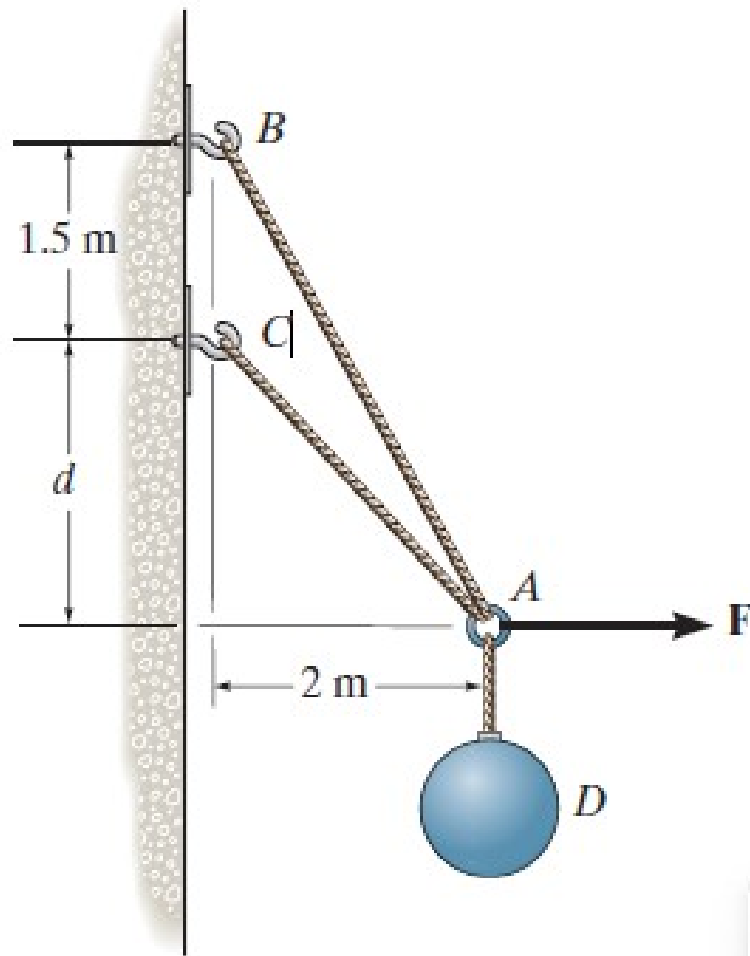
From the geometry, $l = \frac{1.5}{\cos \theta}$ and $\theta = 29.37^\circ$. Therefore

$$l = \frac{1.5}{\cos 29.37^\circ} = 1.72 \text{ m}$$

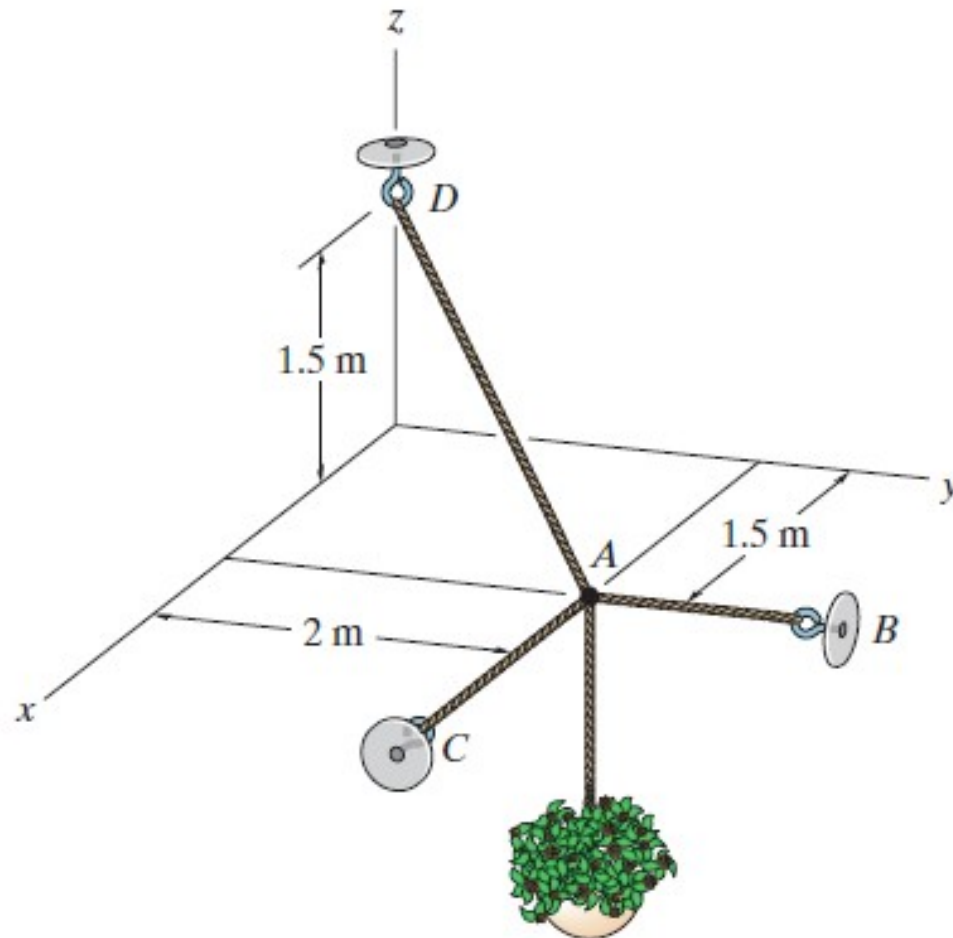
Ans.



Determine a força em cada segmento de corda, F tem peso de 20kg



Determine a força em cada cabo, sabendo que as flores pesam 40 kg



V **Anc.**