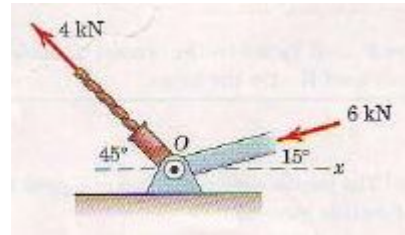


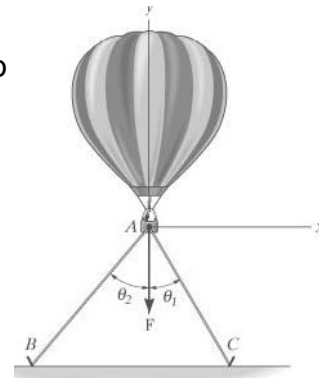
Forces – 2 – Tutorial

1. The two structural members, one in tension, one in compression, exert the forces shown on the joint O.



Calculate the magnitude of the resultant and the angle it makes with the positive x-axis.
(8720N, 172°)

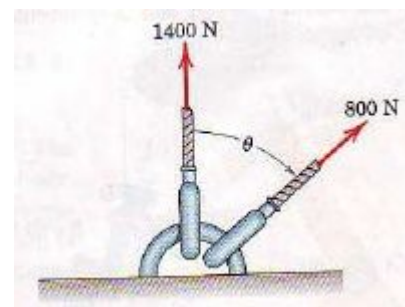
2. A resultant vertical force, F , of 1750N is needed to keep the balloon in place.
 F is the resultant of the tensions in the two cables.



Calculate the tensions in AB and AC, where:
 $\theta_1 = 30^\circ$,
 $\theta_2 = 40^\circ$

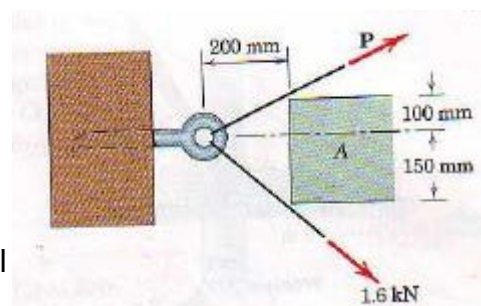
(AB = 930N, AC = 1200N)

3. Calculate the angle, θ , at which the 800N force must be applied so that the resultant of the two forces, R , is 2000N. *(51°)*



Under this condition, calculate the angle between the resultant, R , and the vertical. *(18°)*

4. A spike needs to be removed from timber by applying a horizontal force. An obstruction A prevents direct access, so that two forces, one of 1.6kN, and the other P are applied by cables, as shown. Calculate the magnitude of P needed to produce a resultant horizontal force, R . *(2.15kN)*



Calculate the value of R . *(3.20kN)*