

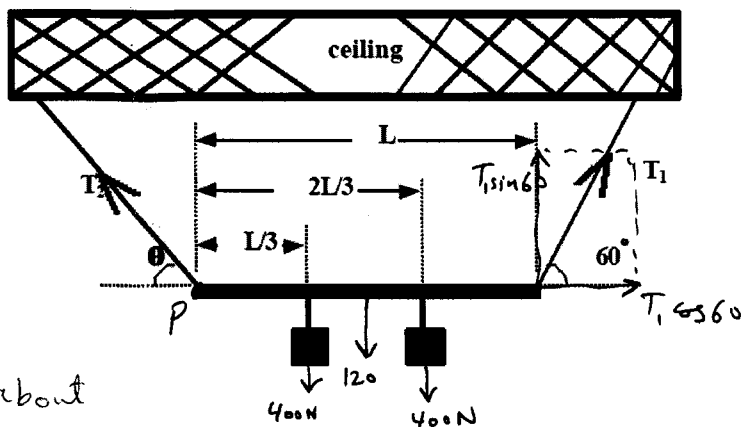
Phys101 – Quiz # 9 (Ch.12) – Sec # 37

Name:

Key

ID #

A uniform bar of length $L = 1.2$ m and weight 120 N is supported by two ropes. Two 400 -N weights are suspended at $L/3$ and $2L/3$ from the left end. Find the tension T_1 in the right hand rope.



Take the torque about the left end (point P).

$$\vec{\tau}_{net,P} = -400\left(\frac{L}{3}\right) - 400\left(\frac{2L}{3}\right) + T_1 \sin 60 (L) - 120\left(\frac{L}{2}\right) = 0$$

$$T_1 = \frac{\frac{400}{3} + \frac{2(400)}{3} + \frac{120}{2}}{\sin 60} = \boxed{531.2} \text{ N}$$