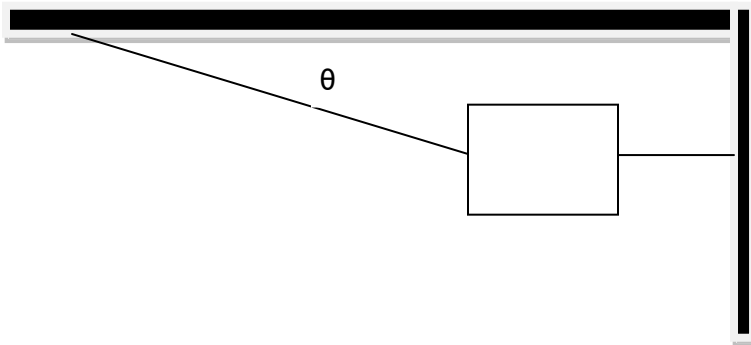
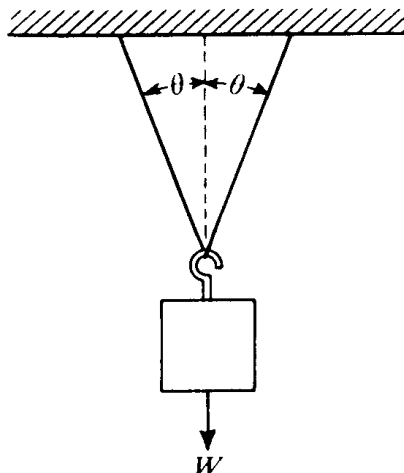


1.



A 10 kg box is suspended by two strings as shown above. The angle  $\theta$  is  $35^\circ$ . Assume the cord on the right is perfectly horizontal. Find the tension in both cords.

|  |
|--|
| $T_1 = 140 \text{ N}$<br>$T_2 = 171 \text{ N}$ |
|--|



2. An object of weight  $W$  is suspended from the center of a massless string as shown above. The tension is the same in both cords as they each support an equal share of the weight of the object. Calculate the tension in either string in terms of  $W$  and  $\theta$ .

$$T = \frac{W}{2 \cos \theta}$$

3. Use the above diagram again. Assume that the angles now are not equal, and that the angle  $\theta_1$  is  $45^\circ$  and the angle  $\theta_2$  is  $60^\circ$ .  $\theta_1$  is the angle on the left in the diagram. Calculate the tension in both cords again in terms of  $W$ . Give an EXACT answer.

$$T_1 = \frac{2\sqrt{3}}{1 + \sqrt{3}} W$$

$$T_2 = \frac{\sqrt{2}}{1 + \sqrt{3}} W$$