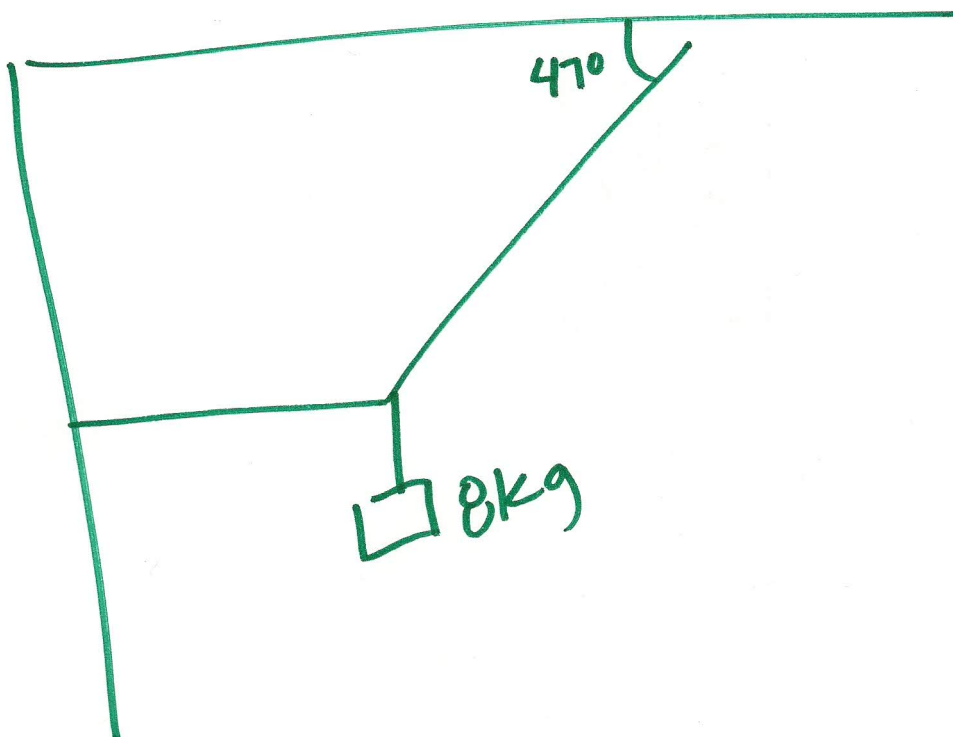
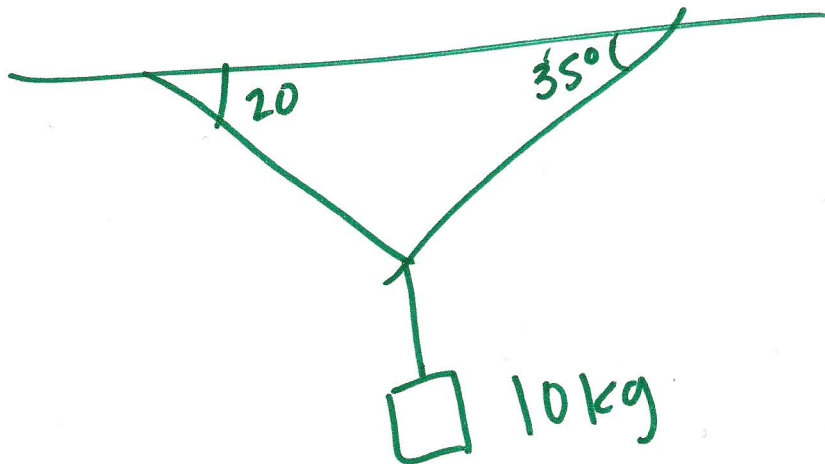
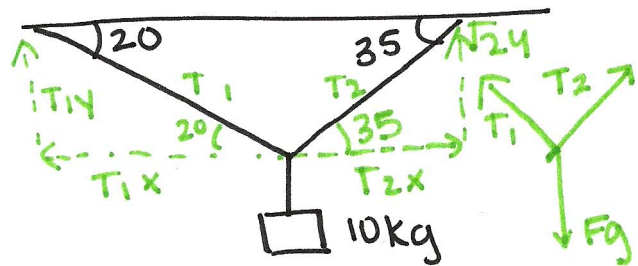


Find the tensions in the strings:



Tension Practice Problems:

① Find the tension in the strings



$$T_{1y} = T_1 \sin 20$$

$$T_{1x} = T_1 \cos 20$$

$$T_{2y} = T_2 \sin 35$$

$$T_{2x} = T_2 \cos 35$$

X

$$F_{net} = T_{2x} - T_{1x}$$

$$0 = T_2 \cos 35 - T_1 \cos 20$$

$$T_2 \cos 35 = T_1 \cos 20$$

$$T_2 = T_1 \frac{\cos 20}{\cos 35} \quad T_2 = 1.147 T_1$$

Y

$$F_{net} = T_{1y} + T_{2y} - F_g$$

$$0 = T_1 \sin 20 + T_2 \sin 35 - (10 \text{ kg})(9.8)$$

$$98 = T_1 \sin 20 + 1.147 T_1 \sin 35$$

$$98 = T_1 (\sin 20 + 1.147 \sin 35)$$

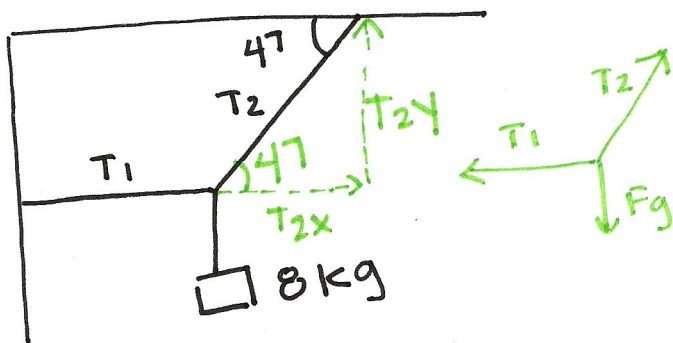
$$98 = T_1 (0.999)$$

$$T_1 = 98.09 \text{ N}$$

$$T_2 = 1.147 (T_1) \Rightarrow T_2 = 1.147 (98.09)$$

$$T_2 = 112.51 \text{ N}$$

② Find the tension in the strings:



$$T_{2x} = T_2 \cos 47$$

$$T_{2y} = T_2 \sin 47$$

$$F_g = m (9.8 \text{ m/s}^2)$$

$$F_g = (8 \text{ kg})(9.8 \text{ m/s}^2) = 78.4 \text{ N}$$

Y

$$F_{net} = T_{2y} - F_g$$

$$0 = T_2 \sin 47 - 78.4 \text{ N}$$

$$T_2 = 107.19 \text{ N}$$

X

$$F_{net} = T_{2x} - T_1$$

$$0 = T_2 \cos 47 - T_1$$

$$0 = (107.19 \text{ N}) \cos 47 - T_1$$

$$T_1 = 73.12 \text{ N}$$