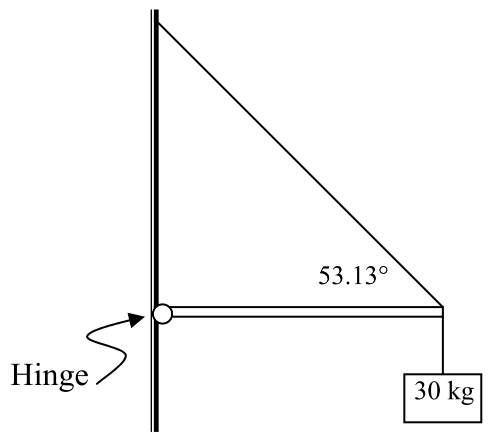
**W4.02**

# STATIC EQUILIBRIUM – Bars & Cables-KEY

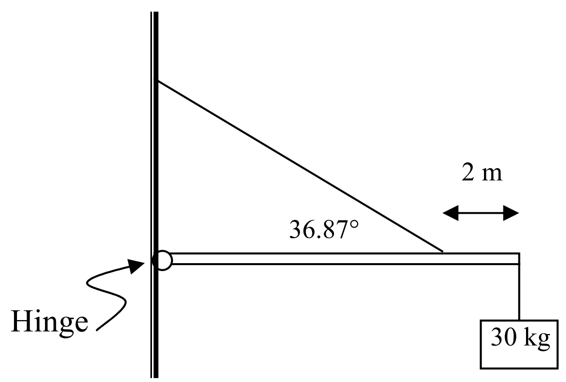
$\Sigma F = 0 \ \ \& \ \ \Sigma \tau = 0$

[1] Find the tension in the cable and both the horizontal and vertical components that the hinge supplies to the bar (remember direction).
Note: The bar is 20 kg & 10 meters long




T=500 N
$F_{Hx}$=300 N right
$F_{Hy}$=100 N up

[2] Find the tension in the cable and both the horizontal and vertical components that the hinge supplies to the bar (remember direction).
Note: The bar is 20 kg & 10 meters long

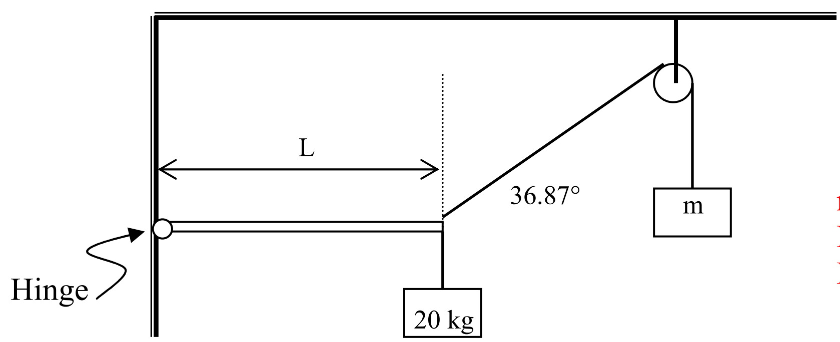



T=833 1/3 N
$F_{Hx}$=666 2/3 N right
$F_{Hy}$=0 N

**STATIC EQUILIBRIUM – Bars & Cables-KEY**

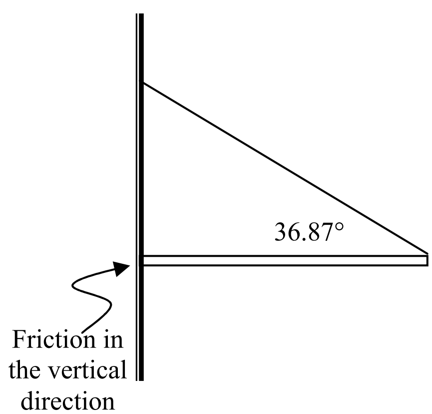
$\Sigma F = 0$ & $\Sigma \tau = 0$

[3] Find the mass of the box labeled "m" and both the horizontal and vertical components that the hinge supplies to the bar (remember direction).
Note: The bar is 50 kg




m=75 kg
$F_{Hx}$=600 N left
$F_{Hy}$=250 N up

[4] Find the minimum coefficient of friction (μ) required between the end of the bar and the wall in order to maintain static equilibrium.
Note: The bar is 600 N & 8 meters long.
Hint: normal force is like horizontal component of a hinge
friction needed is like vertical component of a hinge




$F_{Norm}$=400 N right
$F_{friction}$=300 N up
$\mu_{min}$=0.75