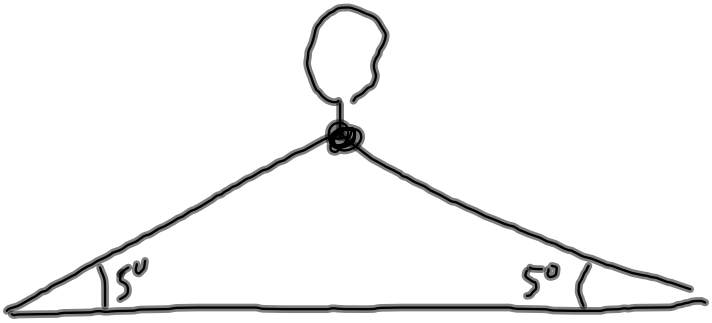
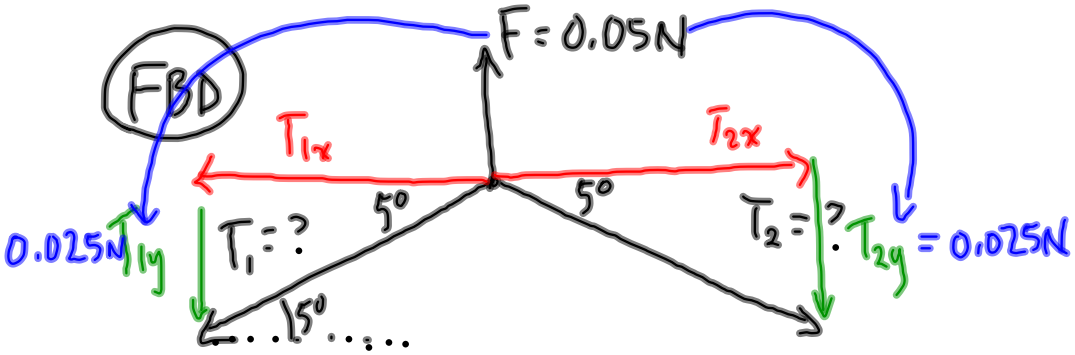
3.





Horizontally

$T_{1x} = T_{2x}$

$T_1 \cos 5^\circ = T_2 \cos 5^\circ$

$T_1 = T_2$

Vertically

$T_{1y} + T_{2y} = 0.05N$

$T_1 \sin 5^\circ + T_2 \sin 5^\circ = 0.05N$

$T_1 \sin 5^\circ + T_1 \sin 5^\circ = 0.05N$

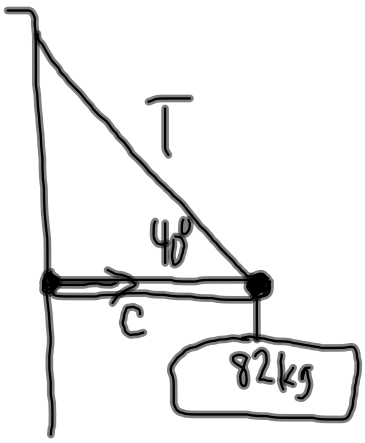
$2T_1 \sin 5^\circ = 0.05N$

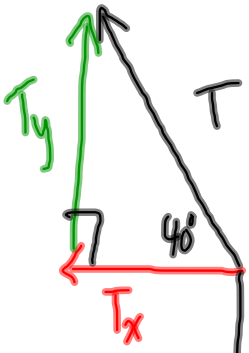
$T_1 = \frac{0.05N}{2 \sin 5^\circ}$

$T_1 = 0.29N$

$T_2 = 0.29N$

4.





$F_g = (82\,kg)(9.81\,m/s^2)$

$F_g = 804.42N$

Vertically

$T_y = F_g$

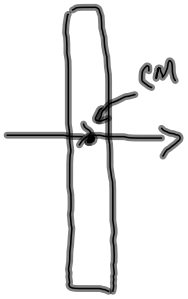
$T_y = 804.42N$

Find T and T_x using SOHCAHTOA

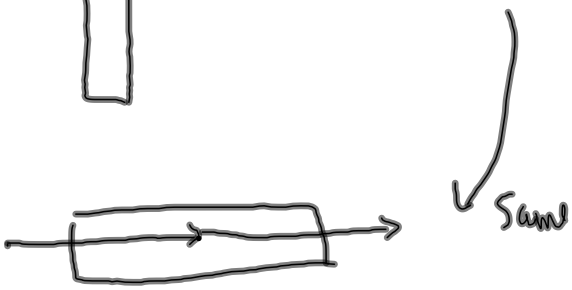
Torque

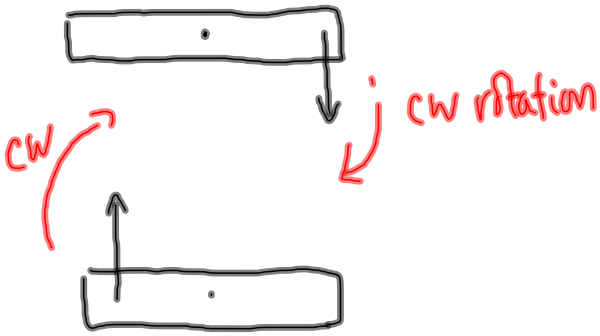
The twisting that occurs when forces do not act through a common point.

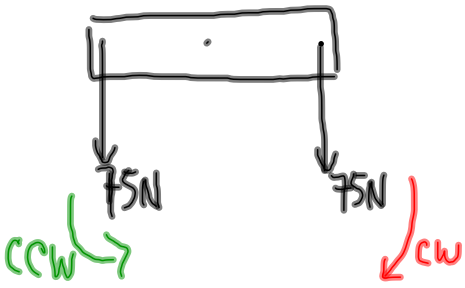
Consider a log:



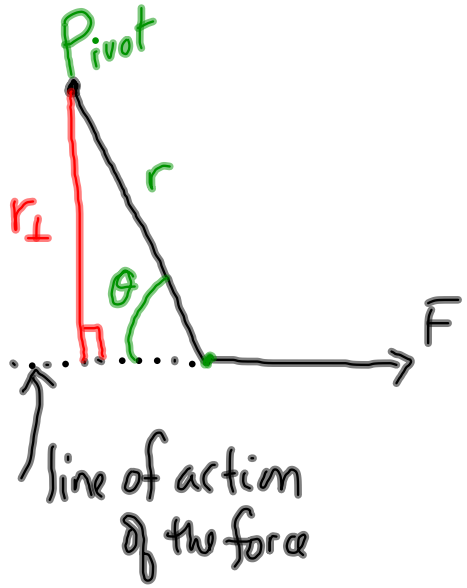
pushing a pulling through the centre of mass will not cause the log to twist.







← Static Equilibrium



Torque:

$$\tau = r_\perp F \quad (N \cdot m)$$

$$\tau = (r \sin\theta) F$$ ← magnitude of torque

$$\boxed{\tau = rF\sin\theta}$$

Torques for CCW rotations are + (torque vector is out of the board)

Torques for CW rotations are − (into the board)

TO DO:

FOP Sheet (booklet) #1

Look over the MP/493

Do PP/495 (note .... ladder question, use ground as pivot)