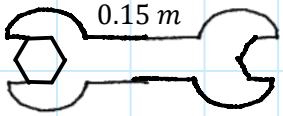
$\tau = Fdsin^*\theta$

P12 - 4.1 - Torque Notes

Torque = Force perpendicular$_{||}$ to distance from pivot $\boxed{\tau = F_{||}d}$; $Fd = Nm$

How much Torque can a 100 N force do on a 0.15 m wrench?

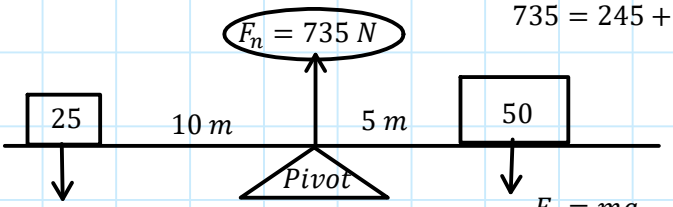


$\tau = Fd$
$\tau = 100(0.15)$
$\tau = 15\ Nm$

Teeter-totter

Balanced! $\boxed{F_{up} = F_{down}}$

$735 = 245 + 490$ ✓



$\tau = Fd$
$\tau = mgd$
$\tau = 25(9.8)(10)$
$\tau = 2450\ Nm$

$F_g = mg$
$F_g = 25(9.8)$
$F_g = 245N$

$\tau_{cc} = \tau_c$
$F_{cc}d = F_cd$

$F_g = mg$
$F_g = 50(9.8)$
$F_g = 490N$

$\tau = Fd$
$\tau = mgd$
$\tau = 50(9.8)(5)$
$\tau = 2450\ Nm$

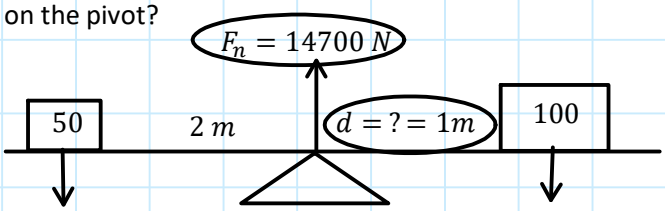
Force was for Fun!

C=CC

Counter − Clockwise Torque = *Clockwise Torque*

Up=Down

How far from the Pivot is the 100 kg block so the system is in equilibrium?What is the upward force on the pivot?



$F_g = mg$
$F_g = 50(9.8)$
$F_g = 4900\ N$

Torque at Pivot $= 0$; $d = 0$!

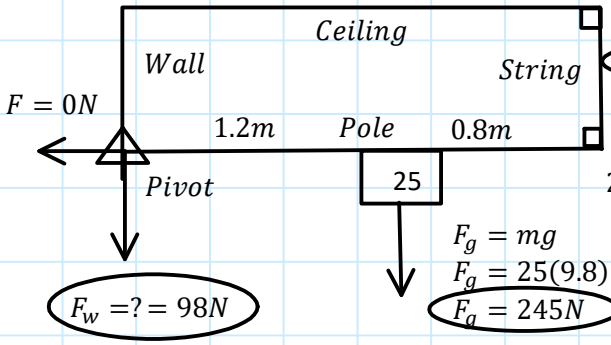
$F_g = mg$
$F_g = 100(9.8)$
$F_g = 9800\ N$

$\tau_c = \tau_{cc}$
$F_{||}d = F_{||}d$
$9800d = 4900(2)$
$d = 1m$

C=CC

Find the Tension in the string. Ignore mass of the pole.

What is the force on the wall by the pole?



$T = ? = 147N$

$\tau_c = \tau_{cc}$
$F_gd = Td$
$245(1.2) = T(2)$
$T = 147\ N$

$F_g = mg$
$F_g = 25(9.8)$
$F_g = 245N$

C=CC

$F_{up} = F_{down}$
$F_w + T = F_g$
$F_w = F_g - T$
$F_w = 245 - 147$
$F_w = 98\ N$

Up=Down

If Pole has mass: $\tau = F_{g||}d$ *is at centre*

You choose the location of the Pivot. Draw a Triangle!