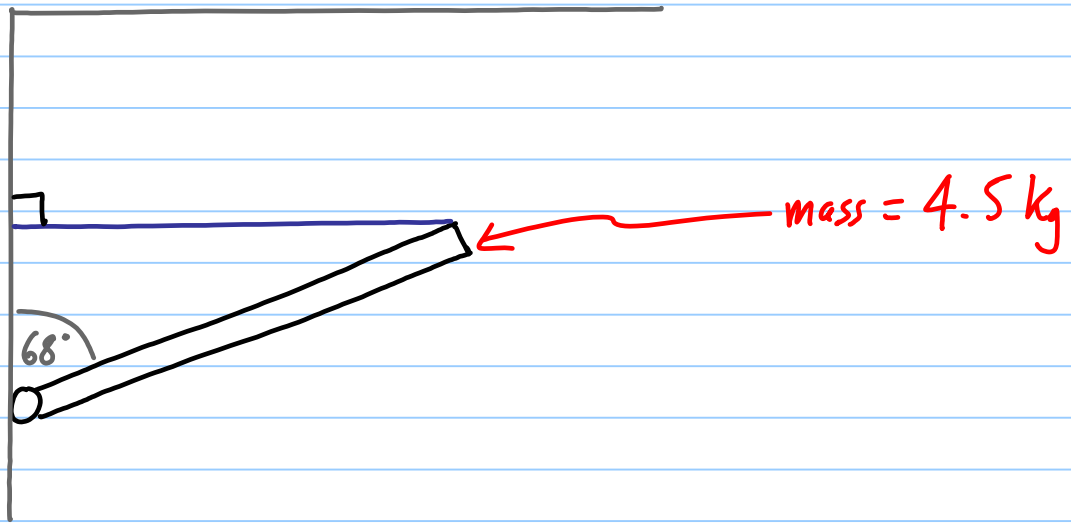
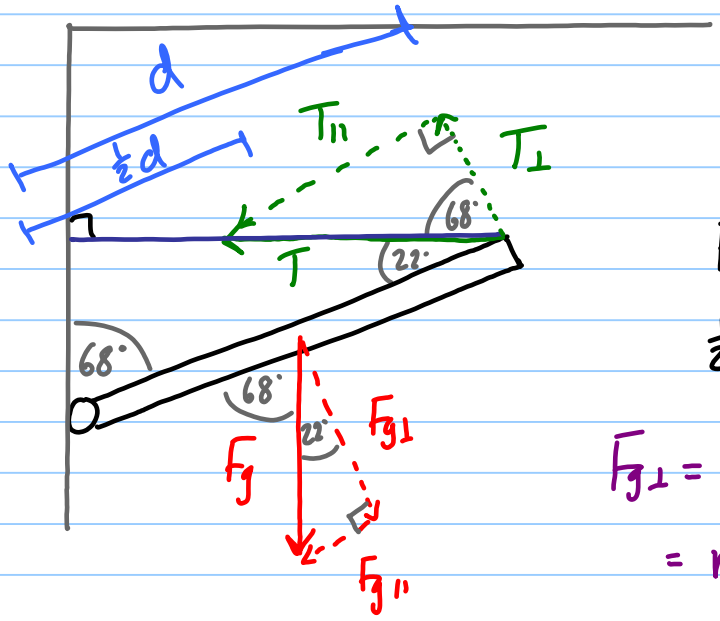
Quiz 4b

Note Title 08/11/2011

Find the tension in the cable and the magnitude of the vertical and horizontal supporting forces provided by the hinge.





$\tau_C = \tau_{CC}$ ✓

$F_{g\perp}(\frac{1}{2}d) = T_\perp d$ ✓

$\frac{1}{2}F_{g\perp} = T_\perp$

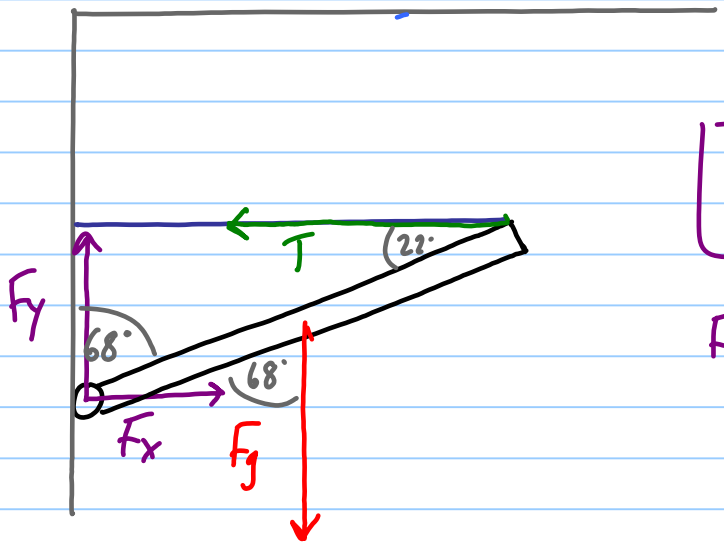
$F_{g\perp} = F_g \cos 22°$ $\quad T_\perp = T\cos 68°$

$= mg\cos 22°$

$\frac{1}{2}mg\cos 22° = T\cos 68°$

$T = \frac{\frac{1}{2}mg\cos 22°}{\cos 68} = \frac{\frac{1}{2}(4.5\,kg)(9.8)\cos 22°}{\cos 68°}$

$= \boxed{54.6\,N}$ ✓



$\boxed{F_x = T = 54.6\,N}$ ✓

$F_y = F_g = mg = (4.5\,kg)(9.8\,m/s^2)$

$\boxed{= 44.1\,N}$ ✓