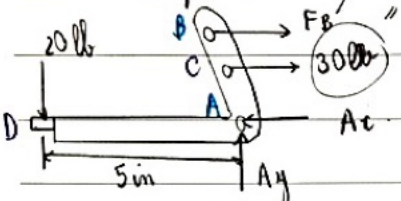
Oct 15

Example: could be right or left.



$20 * 1.5$ in" given: An operator applies 20 lb to the foot pedal. A spring with $k = 20$ lb/in is stretched 1.5 in. Draw: a free-body diagram of the foot pedal.

But because the force is applied downward, at point B, the force goes to the left side remove the support A, A could be moved along Ax and Ay.

$\Sigma \vec{F}_x = 0 \quad \& \quad \Sigma \vec{F}_y \Rightarrow \Sigma M = 0.$

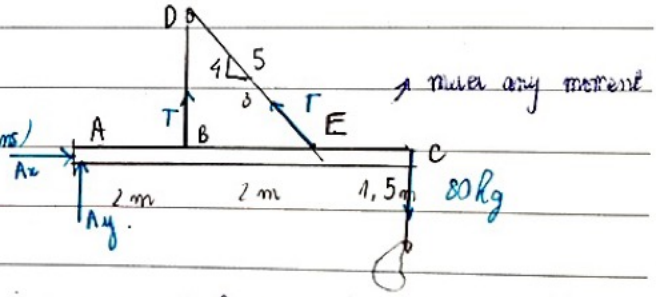
$\Sigma \vec{F}_y = 0 \Rightarrow A_y = -20$ lb

Submission at any point (A, B, C, D) equal to zero because none of point in static system is moving.

to solve the equation, start with $\Sigma F_y = 0$ the ΣM (any of A, B, C, D) $= 0$ then get back to $\Sigma \vec{F}_x = 0$.

Concept quiz: 1. (3) 3 forces.

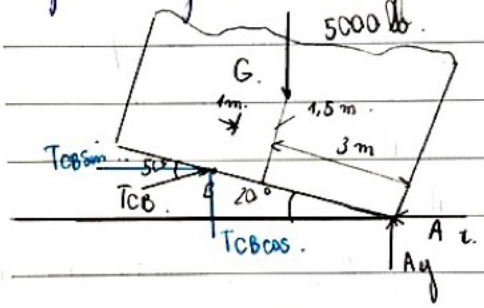
1 - tension, 2 - Ay and 3 - Ax (3 unknowns)



↗ never any moment

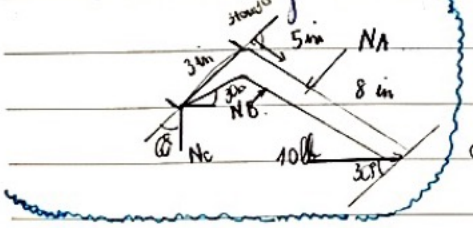
Problem solving.

Draw a FBD of the 5000 lb dumpster (D) it is supported by a pin at A and the hydraulic cylinder BC (treat as a short link)

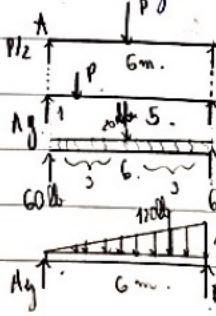


3 unknown. Ax, Ay, T.

Draw a FBD of the bar, which has smooth points of contact at A, B and C.



distributed law



$\circlearrowleft M_A = 0.$

$-P * 1 + B_y * 6 = 0$

$B_y * 6 = P * 1 \Rightarrow B_y = \frac{P}{6}$

$A_y = 120 \frac{2}{6} = 40$lb

$\Rightarrow \Sigma M_A = 0 \Rightarrow -120 * 4 + B_y * 6 = 0$

$\Rightarrow B_y = 80$ lb.