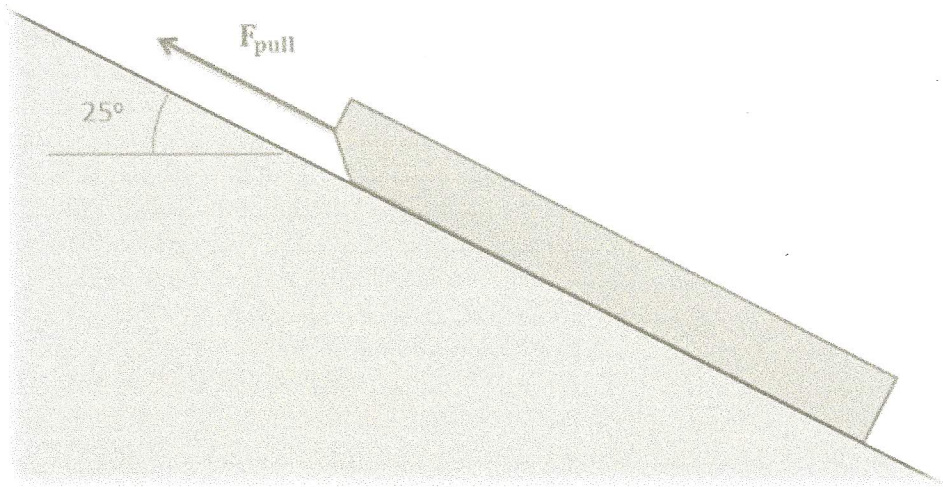
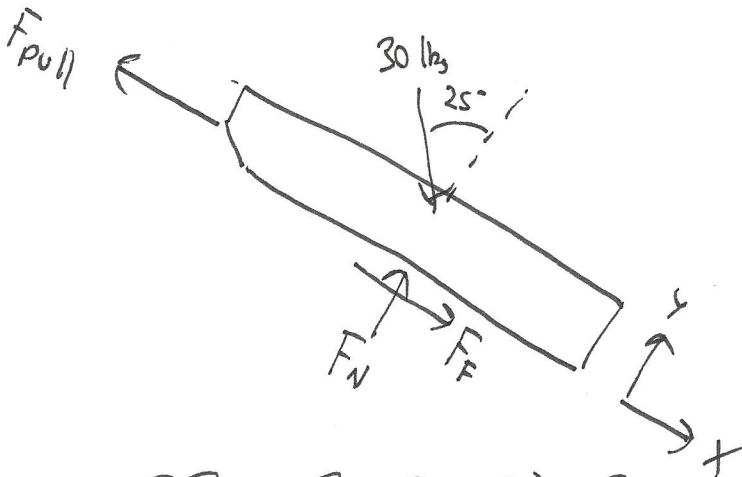


### Question 2:

A sled is being pulled up an icy incline of 25 degrees. If the static coefficient of friction between the ice and the sled is .4 and the kinetic coefficient of friction is .3, what is the required pulling force needed to keep the sled moving at a constant rate?



Calculations:



$$\sum F_x = F_f + 30 \sin(25) - F_{pull} = 0$$

$$\sum F_y = F_N - 30 \cos(25) = 0$$

sliding so  $F_f = (\mu_k)(F_N) = .3 F_N$

$$F_N = 30 \cos(25) = 27.19 \text{ lbs}$$

$$(.3)(27.19) + 30 \sin(25) = F_{\text{pull}}$$

$$F_{\text{pull}} = 20.84 \text{ lbs}$$