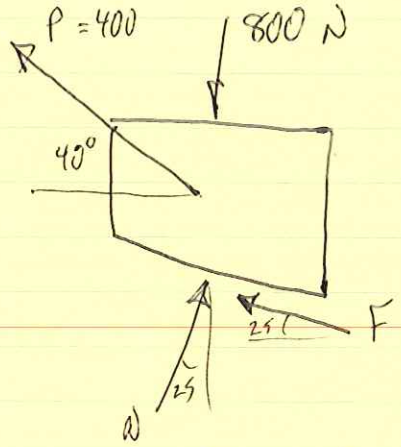
PROB. 8.3

FBD:



ASSUME EQUILIBRIUM

$\Sigma F_x = 0$: $-400\cos 40^\circ + N\sin 25^\circ - F\cos 25^\circ = 0$

$0.423N - 0.906F = 306$

$\Sigma F_y = 0$: $400\sin 40^\circ - 800 + N\cos 25^\circ + F\sin 25^\circ = 0$

$0.906N + 0.423F = 543$

$F = -48.0$ [N], $N = 622$ [N]

MAXIMUM FRICTION FORCE IS

$F_{max} = \mu_s N = (0.2)(622N) = 124$ [N]

SINCE $F < F_{max}$, BLOCK IS IN EQUILIBRIUM.