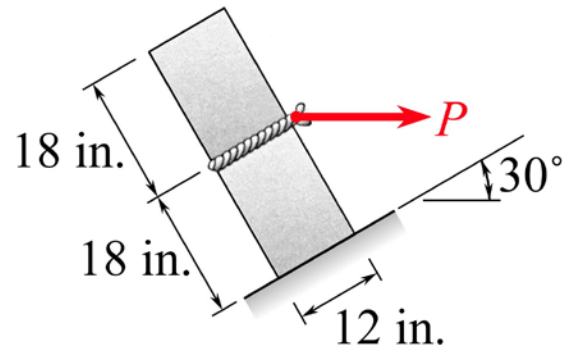


MEEG 2003 [Quiz #9.m27](#)

A 20-lb concrete block is in equilibrium as shown, where $\mu_s = 0.25$ between the block and the incline. Determine the magnitude P of the applied horizontal force if (a) slipping of the block is assumed to impend, (b) tipping of the block is assumed to impend. In conclusion, what is the maximum critical value P_{cr} that P is allowed to have and the block still remains in equilibrium?



(a) *FBD* for the block assumed in impending slipping ②

$$P = 19.338 \quad N = 26.99 \quad P = 19.34 \text{ lb} \quad ②$$

(b) *FBD* for the block assumed in impending tipping ②

$$P = 18.214 \quad P = 18.21 \text{ lb} \quad ②$$

Conclusion: Choose the smaller of the two P 's for P_{cr} .

$$P_{cr} = 18.21 \text{ lb} \quad ②$$