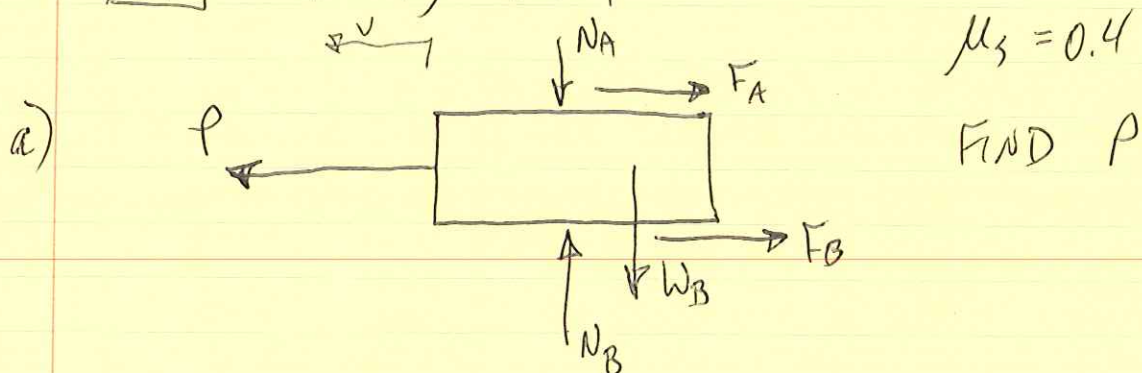


PROB. 8.14

FBD: 30 kg BLOCK



$$N_A = W_A = (20 \text{ kg}) \left( 9.81 \frac{\text{m}}{\text{s}^2} \right) = 196 \text{ N}$$

$$W_B = (30)(9.81) = 294 \text{ N}$$

$$\sum F_y = 0: N_B - N_A - W_B = 0$$

$$N_B = W_A + W_B$$

$$F_A = \mu_s N_A = \mu_s W_A$$

$$F_B = \mu_s N_B = \mu_s (W_A + W_B)$$

$$\sum F_x = 0: P = F_A + F_B$$

$$P = \mu_s W_A + \mu_s (W_A + W_B)$$

$$P = \mu_s (2W_A + W_B)$$

$$P = (0.4) [2(196 \text{ N}) + (294 \text{ N})]$$

$$P = 274 \text{ N}$$

b) SAME AS PROB. 8.13(b),  $P = 196 \text{ N}$