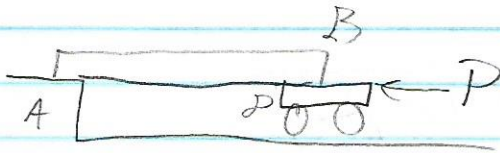


8-34

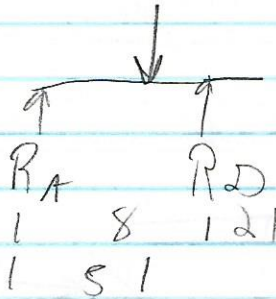


1200 lbf

FBD YAB:

$$\Sigma F_y = 0 = R_A + R_D - 1200$$

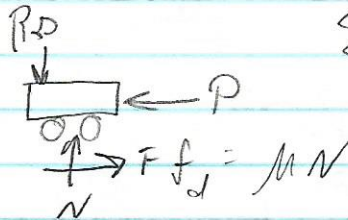
$$R_A = 450 \text{ lbf}$$



$$\Sigma M_A \circlearrowleft = 0 = 8R_D - 5 \cdot 1200$$

$$R_D = 750 \text{ lbf}$$

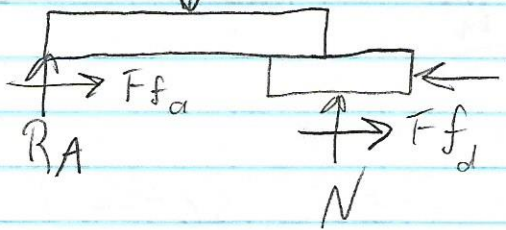
FBD Dolly:



$$\Sigma F_y = 0 = N - R_D$$

$$N = 750 \text{ lbf}$$

FBD All:



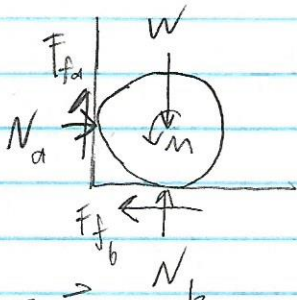
$$\Sigma F_x = 0 = P - F_{fd} - F_{fa}$$

$$P = \mu N + \mu R_A$$

$$P > 3(750 + 450)$$

$$P > 360 \text{ lbf}$$

8-17



$$M = r \times F$$

$$\vec{F}_{fa} = \mu_s N_a$$

$$\vec{F}_{fb} = \mu_s N_b$$

$$\Sigma \vec{M}_B \circlearrowleft = 0 = M - r F_{fa} - r N_a$$

$$M = r N_a (1 + \mu_s)$$

$$\Sigma \vec{F}_x = 0 = N_a - F_{fb}$$

$$N_a = \mu_s N_b$$

$$\Sigma \vec{F}_y = 0 = N_b - W + F_{fa}$$

$$N_b = W - \mu_s N_a$$

$$N_a = \mu_s [W - \mu_s N_a]$$

$$N_a = \mu_s W - \mu_s^2 N_a$$

$$N_a (1 + \mu_s^2) = \mu_s W$$

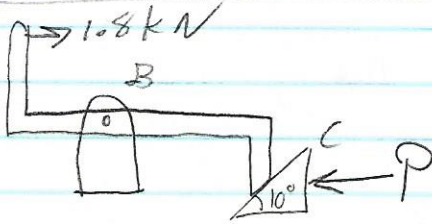
$$N_a = \frac{\mu_s W}{1 + \mu_s^2}$$

8-17

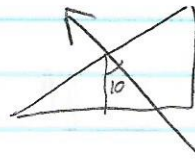
$$M = r N_d (1 + \mu_s)$$

$$M = r \left(\frac{\mu_s W}{1 + \mu_s} \right) (1 + \mu_s)$$

8-139



$$\vec{C} = -0.174C\hat{i} + 0.985C\hat{j}$$



FBD ABC

$$\sum F_x = 0 = 1.8 \text{ kN} - 0.174C + B_x$$

$$\sum F_y = 0 = B_y + 0.985C$$

$$\sum M_B = 0 = -350 \text{ mm} \cdot 1.8 \text{ kN} + 600 \text{ mm} \cdot 0.985C$$

$$C = 1.007 \text{ kN}$$

b)

$$B_x = -61.8 \text{ N}$$

$$B_y = -1.054 \text{ kN}$$

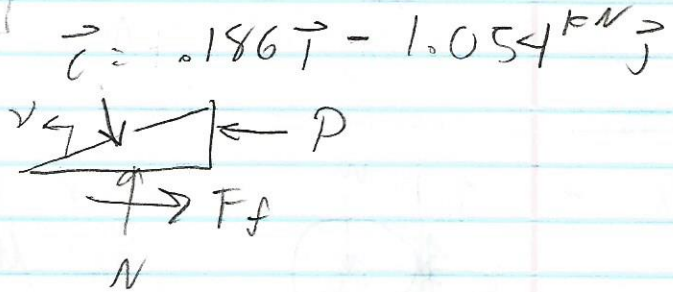
a)

FBD Block:

$$\sum F_x = 0 = 0.186 - P + F_f$$

$$\sum F_y = 0 = -1.054 + N$$

$$N = 1.054$$



$$F_f = \mu_s N = 0.2 \cdot 1.054 = 0.2108$$

$$P = 0.186 + 0.2108$$

$$P = 396.8 \text{ N}$$