

1-65*

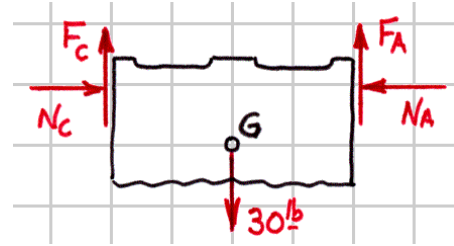
First draw a free-body diagram of the blocks, and write the equations of equilibrium

$$\rightarrow \Sigma F_x = 0: \quad N_C - N_A = 0$$

$$\uparrow \Sigma F_y = 0: \quad F_C + F_A - 30 = 0$$

$$\curvearrowright \Sigma M_A = 0: \quad 8(30) - 16(F_C) = 0$$

$$N_C = N_A \quad F_C = F_A = 15 \text{ lb}$$



Next, from a free-body diagram of the left handle, the equations of equilibrium give

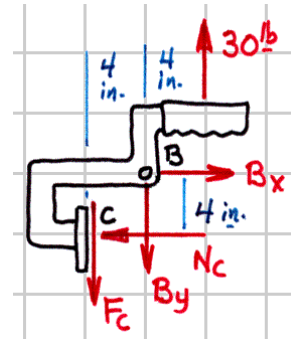
$$\rightarrow \Sigma F_x = 0: \quad B_x - N_C = 0$$

$$\uparrow \Sigma F_y = 0: \quad 30 - B_y - (15) = 0$$

$$\curvearrowright \Sigma M_B = 0: \quad 4(30) + 4(15) - 4N_C = 0$$

$$N_C = 45 \text{ lb}$$

$$B_x = 45 \text{ lb} \quad B_y = 15 \text{ lb}$$

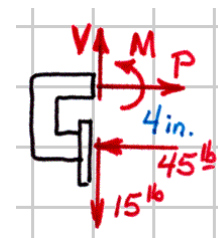


Next, from a free-body diagram of the lower section of the left handle, the equations of equilibrium give

$$\rightarrow \Sigma F_x = 0: \quad P - 45 = 0$$

$$\uparrow \Sigma F_y = 0: \quad V - 15 = 0$$

$$\curvearrowright \Sigma M_{cut} = 0: \quad M - 4(45) = 0$$



$$P = 45 \text{ lb} \dots \text{Ans.}$$

$$V = 15 \text{ lb} \dots \text{Ans.}$$

$$M = 180 \text{ lb} \cdot \text{in.} \dots \text{Ans.}$$