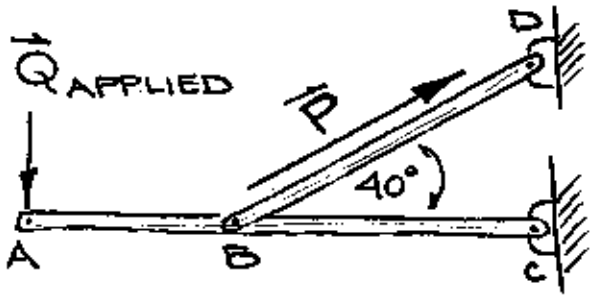
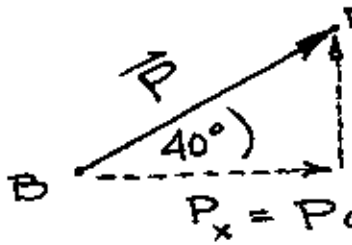
PROB 2.28 p. 34 MECH 234 + 235



$\vec{P} = P_x \hat{i} + P_y \hat{j}$

HORIZ. COMP., P_x = ?

VERT. COMP. $P_y = 240^{lbf}$



VERT. COMP., $P_y = 240^{lbf} = P \sin 40°$

$$\frac{240}{\sin 40°} = P = 373.373$$

MAGNITUDE OF FORCE, $\boxed{P = 373.4^{lbf}}$

$\therefore$ HORIZ. COMP., $P_x = P \cos 40°$

$= (373.4) \cos 40° = 286$

$\boxed{P_x = 286^{lbf}}$

CHECK:

$$|\vec{P}| = \sqrt{(P_x)^2 + (P_y)^2}$$

$$373.4 = \sqrt{(286)^2 + (240)^2}$$

$$= 373.358 \quad \checkmark \text{ okay}$$