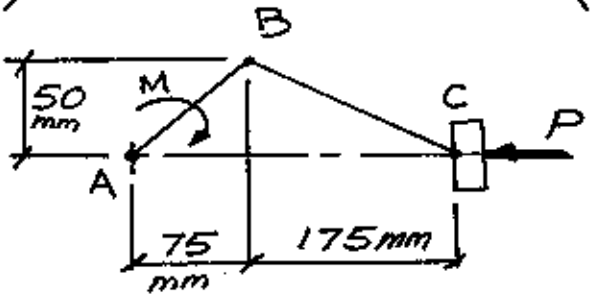
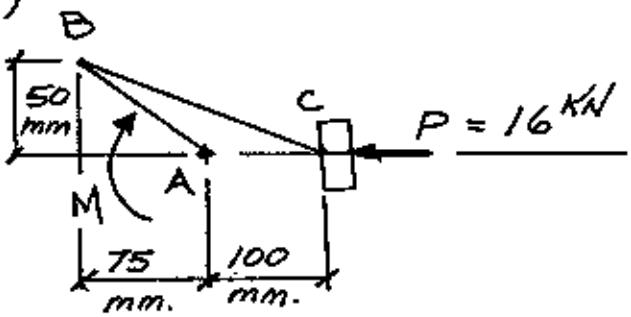
(a.)



(b.)

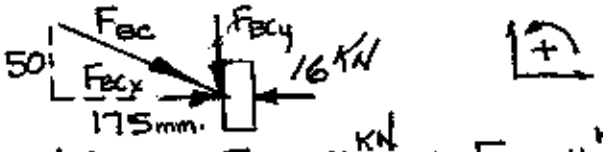


16^{KN} pushes the piston to the left, exerting a force ON MEMBER BC.

BC becomes the "Line of Action" for the force exerted at B on crank arm, AB.

PT: A is the pivot, AB is the moment arm, determine F_{CB} causing a CCW moment.

The CW moment shown needs to balance this.



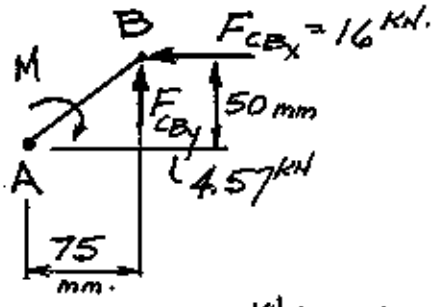
$\Sigma F_x = 0 = F_{BC_x} - 16^{KN} \therefore F_{BC_x} = 16^{KN}$

BY PROPORTIONS:

$$\frac{F_{BCx}}{175} = \frac{F_{BCy}}{50} = \frac{16^{KN}}{175}$$

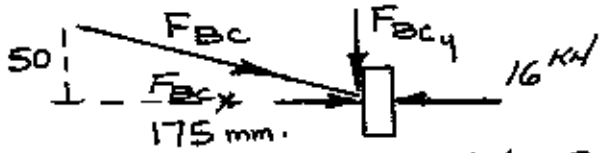
$$\therefore F_{BCy} = \frac{50(16^{KN})}{175} = 4.57^{KN}.$$

APPLY EQUAL & OPP. FORCE on AB at B.



$\Sigma M_A = -M + 16^{KN}(50mm) + 4.57^{KN}(75mm)$

$\therefore M = 1,142.86$ N-m.

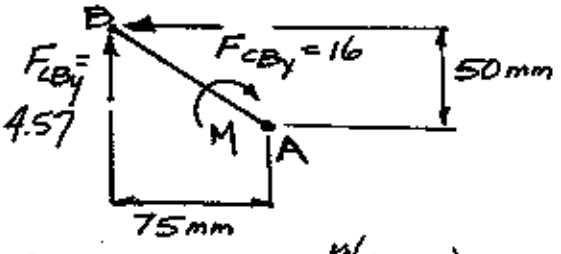


SAME △, SAME VALUES

$F_{BCx} = 16^{KN}$

$F_{BCy} = 4.57^{KN}$

APPLY EQUAL & OPP. FORCE on AB at B.



$\Sigma M_A = 0 = -M + 16^{KN}(50mm) - 4.57^{KN}(75mm.)$

$\therefore M = 457.25$ N-m.