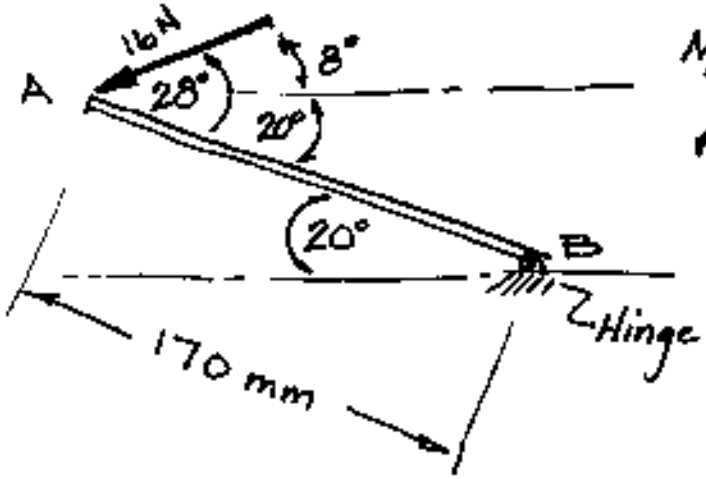
PROB. 3.1 p. 87 MECH 234 + 235

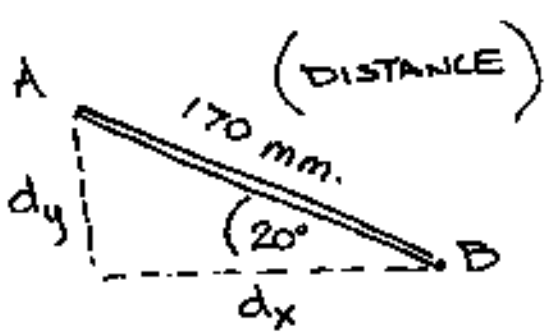
FOOT PEDAL – RESOLVE INTO HORIZ. + VERT. COMPONENTS

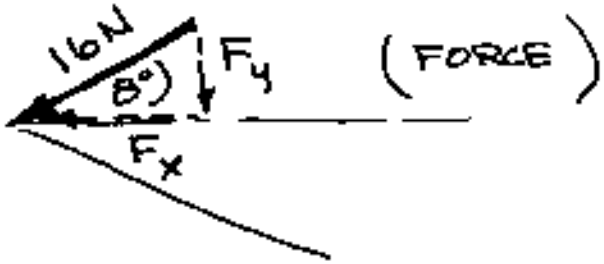


MOMENT ABOUT B.

$\curvearrowleft M_B$ = FORCE × ⊥-dist

$= (F_x)(d_y) + (F_y)(d_x)$





$d_y = 170 \sin 20° = 58.143\text{ mm.}$

$d_x = 170 \cos 20° = 159.748\text{ mm.}$

$F_x = 16 \cos 8° = 15.844\text{ N.}$

$F_y = 16 \sin 8° = 2.227\text{ N.}$

$M_B = (15.844\text{ N})(58.143\text{ mm}) + (2.227\text{ N})(159.748\text{ mm})$

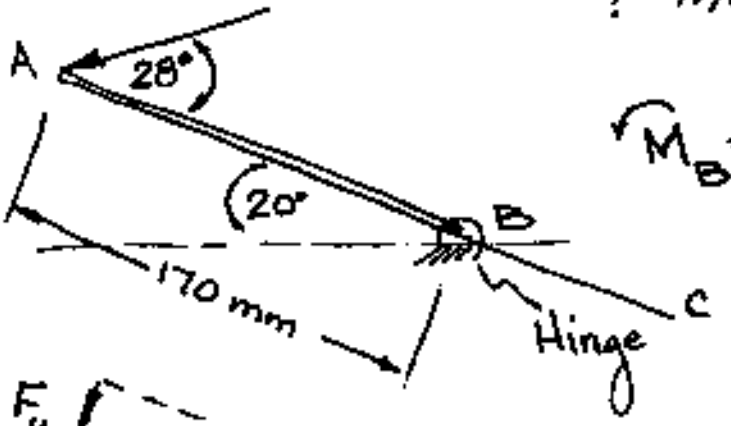
$= 355.759\text{ N mm}\curvearrowleft + 921.218\text{ N.mm}\curvearrowleft$

$M_B = 1276.977\text{ N mm}\curvearrowleft = \boxed{1.277\text{ N m}\curvearrowleft \text{ CCW}}$

PROB. 3.2 P. 87 MECH 234 + 235

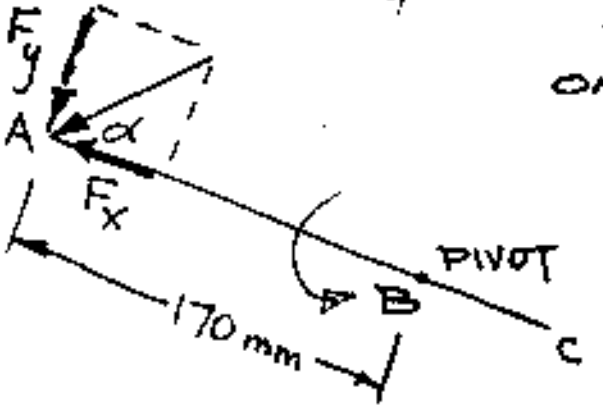
FOOT PEDAL – RESOLVE FORCE RELATIVE TO ABC

? MOMENT ABOUT B.



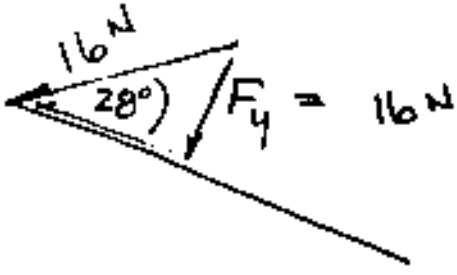
$\circlearrowleft M_B$ = FORCE × dist.

WHERE FORCE IS ⊥ PEDAL. ABC.



ONLY $F_y \perp \overline{ABC}$

$\therefore M_B = F_y (170\text{mm.})$



$F_y = 16\text{N} \sin 28° = 7.512\text{ N}$

$M_B = F_y (170\text{mm.}) = (7.512\text{N.})(170\text{mm})$

$= 1276.963\text{ N mm.}\circlearrowleft$

$M_B = 1.277\text{ N m.}\circlearrowleft$ CCW

SAME RESULT AS 3.1