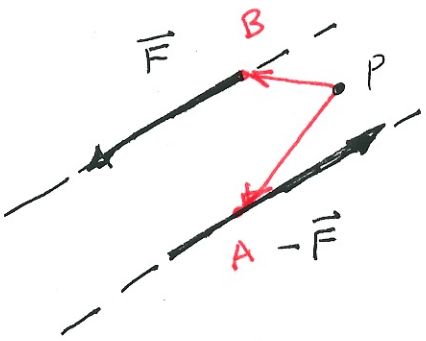
A PAIR of OPPOSITELY-DIRECTED, NON-COLINEAR FORCES IS CALLED A COUPLE.

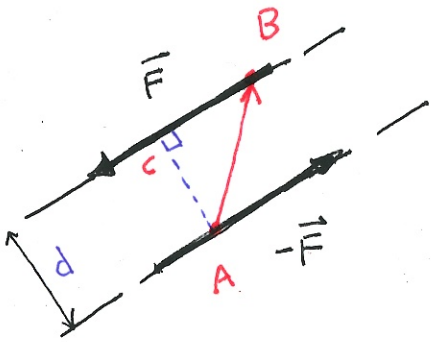


$$\vec{M}_P = \vec{r}_{PA} \times (-\vec{F}) + \vec{r}_{PB} \times \vec{F}$$

$$= (\vec{r}_{PB} - \vec{r}_{PA}) \times \vec{F}$$

$$= \vec{r}_{AB} \times \vec{F}$$

P IS ARBITRARY! THE MOMENT DUE TO A COUPLE IS THE SAME ABOUT ANY POINT IN SPACE.



$$\vec{M}_P = \vec{r}_{AB} \times \vec{F} = (\vec{r}_{AC} + \vec{r}_{CB}) \times \vec{F}$$

$$= \vec{r}_{AC} \times \vec{F} + \vec{r}_{CB} \times \vec{F}$$

$\vec{r}_{CB} \times \vec{F} = \vec{0}$

$$|\vec{M}_P| = d \cdot F$$

MAGNITUDE of ONE FORCE

⊥ DISTANCE BETWEEN FORCES