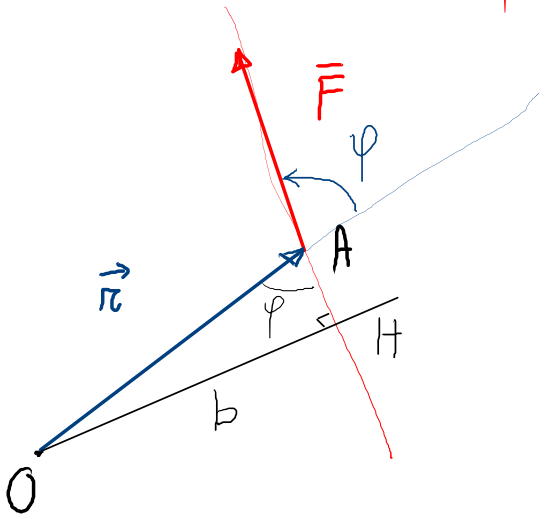
STATICA

Momento $\vec{M}$ di $\vec{F}$ rispetto ad O.



$$\vec{M} = \vec{r} \times \vec{F}$$

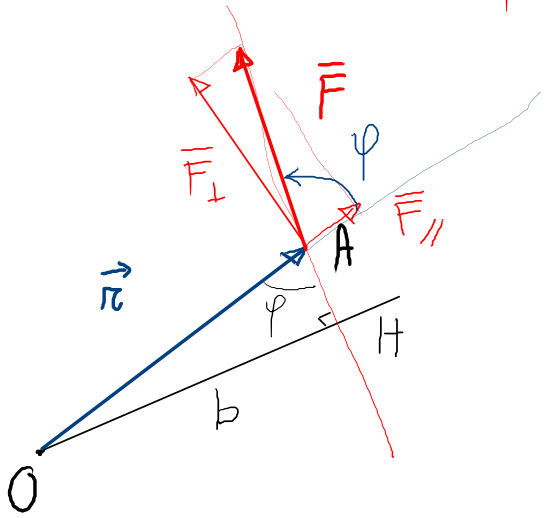
$$|\vec{M}| = |\vec{r}| \cdot |\vec{F}| \cdot \operatorname{sen}\varphi$$
$$= |\vec{r}| \operatorname{sen}\varphi \cdot |\vec{F}|$$
$$= b \cdot |\vec{F}|$$

b = braccio di $\vec{F}$ rispetto ad O

$$[\vec{M}] = m \cdot N$$

STATICA

Momento $\bar{M}$ di $\bar{F}$ rispetto ad O.



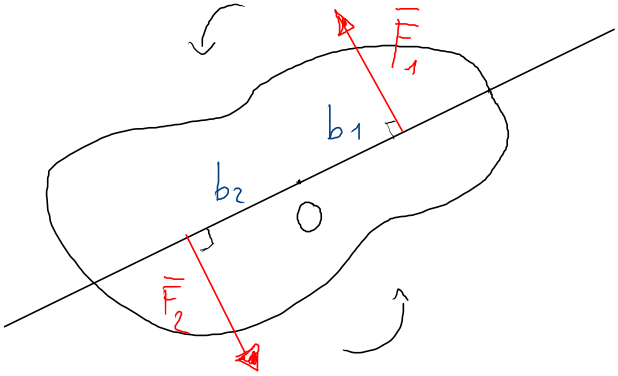
$$\bar{F}_{//} + \bar{F}_{\perp} = \bar{F}$$

$$|\bar{F}_{//}| = |\bar{F}| \cos\varphi$$
$$|\bar{F}_{\perp}| = |\bar{F}| \operatorname{sen}\varphi$$
$$r = |\vec{r}|$$
$$b = r \operatorname{sen}\varphi$$

$$\bar{M}_{//} = \vec{r} \times \bar{F}_{//} = 0$$
$$\bar{M}_{\perp} = \vec{r} \times \bar{F}_{\perp}$$
$$|\bar{M}_{\perp}| = r \cdot |\bar{F}_{\perp}| \cdot \overbrace{\operatorname{sen}\tfrac{\pi}{2}}^{1} = r\,|\bar{F}_{\perp}| = r\,|\bar{F}| \operatorname{sen}\varphi$$

$$\bar{M}_{\perp} = \vec{M}$$

Coppia di Forze



$b_1 = b_2 = b$

$|\bar{F}_1| = |\bar{F}_2| = F$

$\bar{F}_1, \bar{F}_2$ stessa direzione
verso opposto

} Coppia di Forze

$\Sigma \bar{F} = \bar{F}_1 + \bar{F}_2 = 0$ equilibrio traslazionale

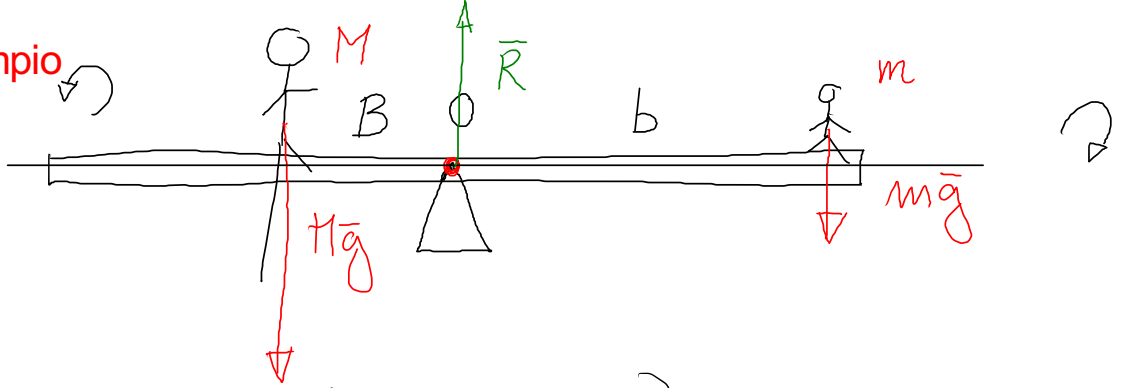
$|\bar{M}_1| = F \cdot b$

$|\bar{M}_2| = F \cdot b$

$\Sigma \bar{M} = \bar{M}_1 + \bar{M}_2 = 2\bar{M}_1 = 2\bar{M}_2 \neq 0$

non c'è equilibrio rotazionale $\Rightarrow$ ruota

Esempio



$$\left.\begin{aligned} |\bar{M}_P| &= MBg \\ |\bar{M}_B| &= mbg \end{aligned}\right\} \qquad MBg = mbg$$

$$B = b\frac{m}{M} < 1$$

$$\Sigma \bar{M} = \bar{M}_P + \bar{M}_B = 0$$

$$\Sigma \bar{F} = M\bar{g} + m\bar{g} + \bar{R} = (M+m)\bar{g} + \bar{R} = 0$$

LE LEVE

→ forza resistente ("resistenza")

→ forza applicata o motrice ("potenza")

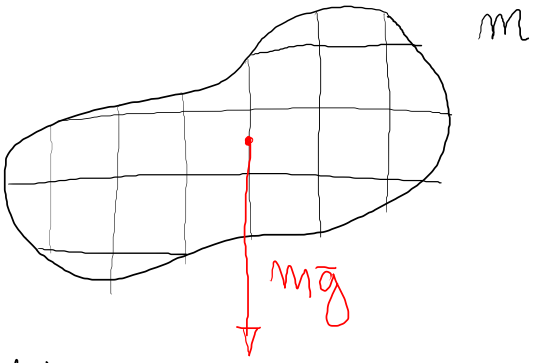
→ fulcro

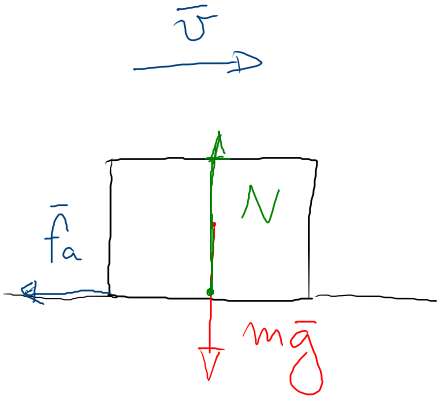
3 generi

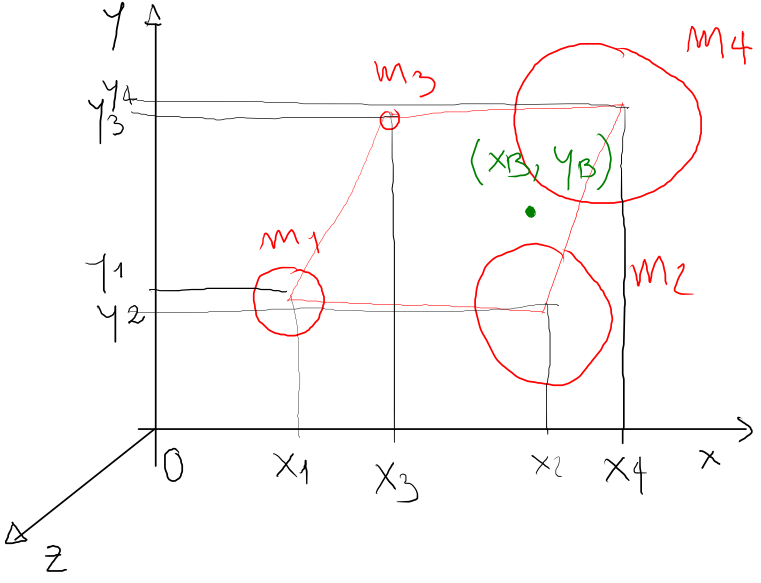
Vantaggio meccanico?

I	fulcro	dipende
II	forza resistente	SI
III	forza applicata	NO

BARICENTRO







$$x_B = \frac{\sum_i m_i x_i}{\sum_i m_i}$$

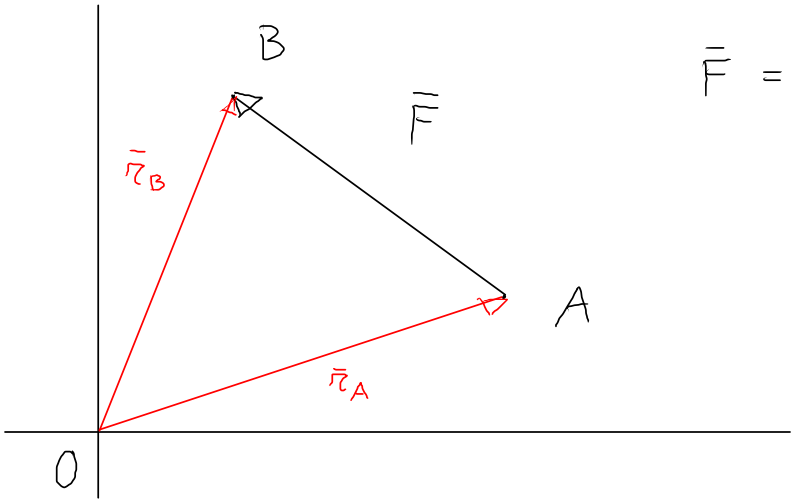
$$y_B = \frac{\sum_i m_i y_i}{\sum m_i}$$

$$z_B = \frac{\sum_i m_i z_i}{\sum m_i}$$

NOTAZIONE SUL LIBRO

$\bar{F} = \bar{B} - \bar{A}$

$\bar{F} = \bar{B}\bar{A}$



$\bar{F} = \bar{r}_B - \bar{r}_A$