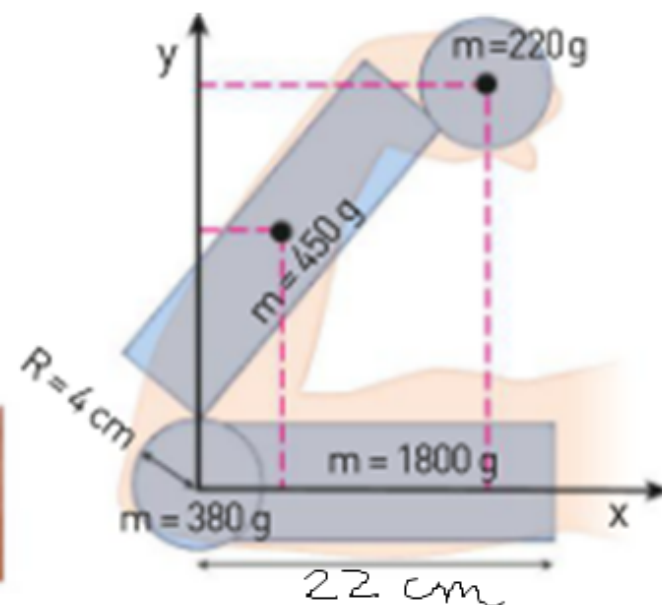


PAG. 520 N 65

$$x_{cm} = \frac{0 \cdot 380 + 5 \cdot 450 + 11 \cdot 1800 + 18 \cdot 220}{380 + 450 + 1800 + 220} \text{ cm} \cong 9,1 \text{ cm}$$



$$y_{cm} = \frac{0 \cdot 380 + 0 \cdot 1800 + 16 \cdot 450 + 25 \cdot 220}{380 + 1800 + 450 + 220} \text{ cm} \cong 4,5 \text{ cm}$$

N 66

$$M = 6,0 \text{ kg}$$

$$m = 3,0 \text{ kg}$$

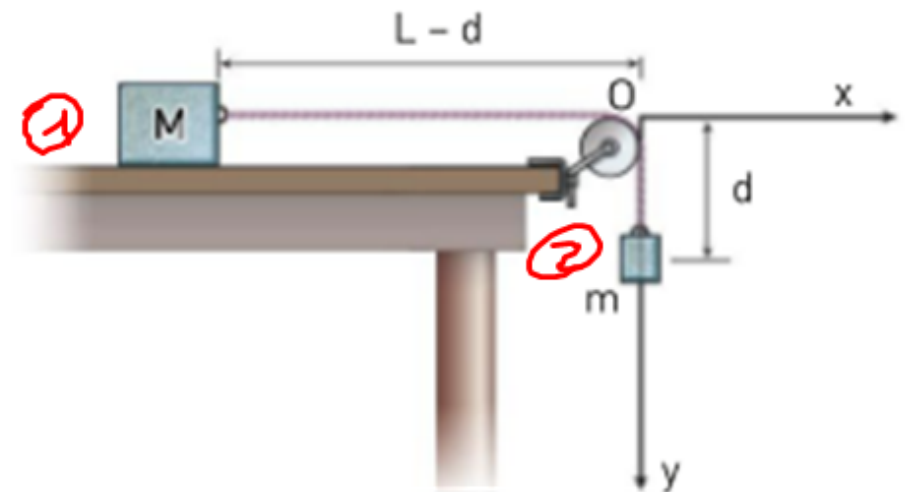
$$L = 3,0 \text{ m}$$

$$1) \quad x_1 = -L + d$$

$$y_1 = 0$$

$$2) \quad x_2 = 0$$

$$y_2 = d$$



$$x_{CM} = \frac{M(d-L) + m \cdot 0}{M+m} = \frac{6,0(d-3,0\text{m})}{9,0} = \frac{2}{3}d - 2,0\text{m}$$

$$y_{CM} = \frac{M \cdot 0 + m \cdot d}{M+m} = \frac{3,0d}{9,0} = \frac{1}{3}d$$

$$C_H = \left(\frac{2}{3}d - 2,0m, \frac{1}{3}d \right)$$

$$A = (0, 1,0m)$$

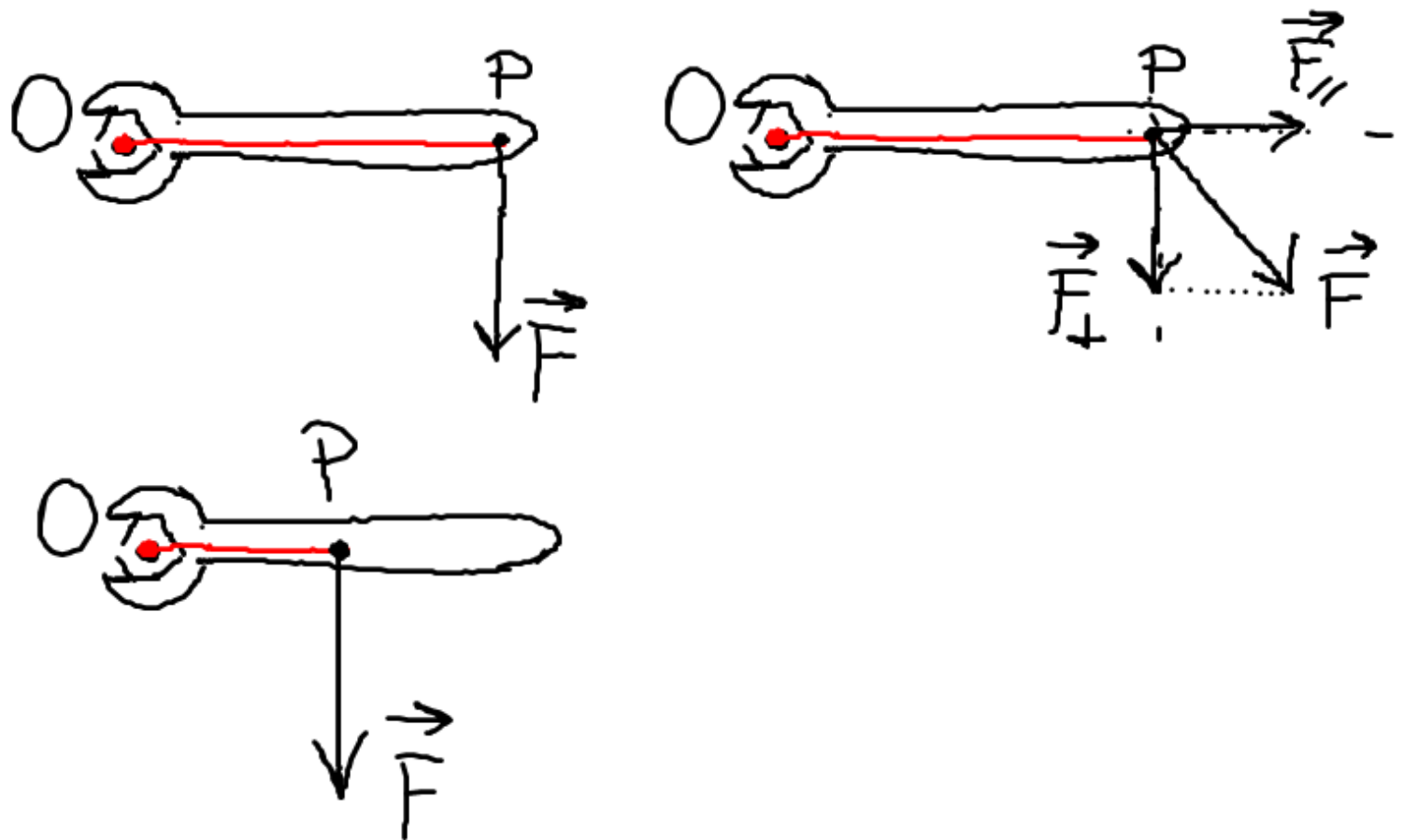
$$\frac{2}{3}d - 2,0m = 0 \quad \text{E} \quad \frac{1}{3}d = 1,0m \quad \text{E POSSIBILE?}$$

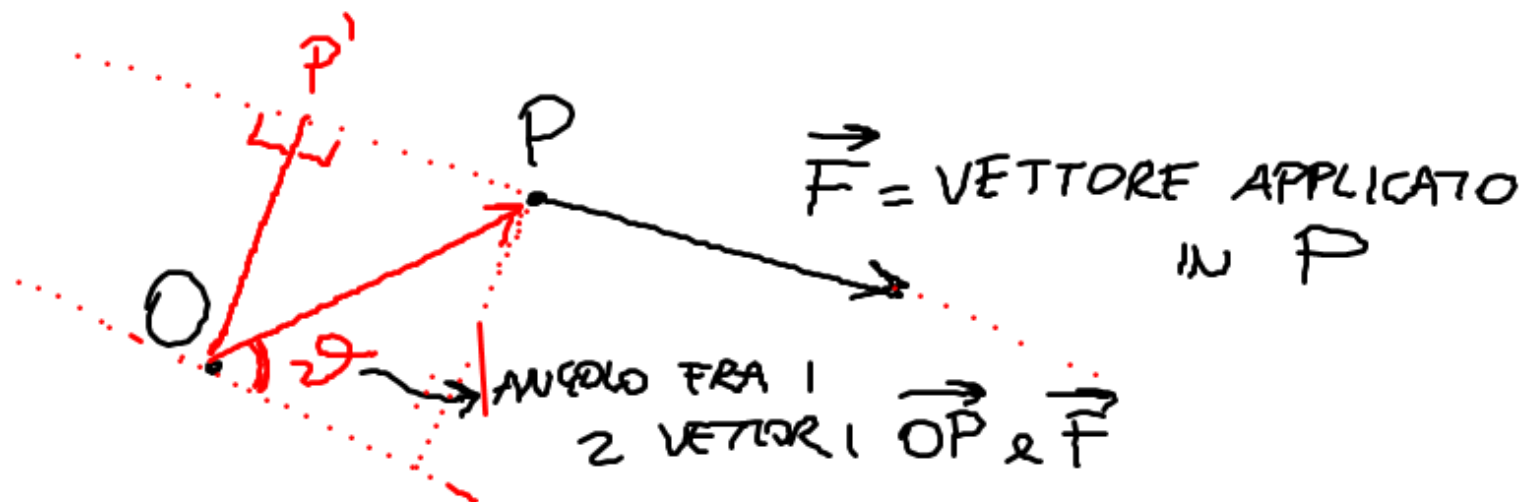
$$\Downarrow \\ d = 3,0m$$

$$\Downarrow \\ d = 3,0m$$

UGUALI \Rightarrow SÌ

MOMENTO DI UNA FORZA



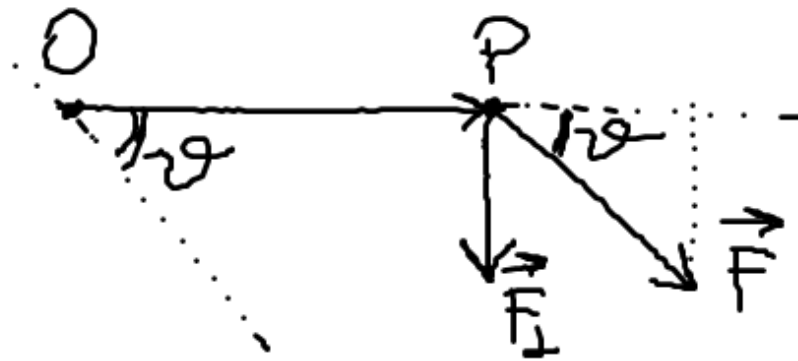


MOMENTO DI \vec{F} (APPLICATO IN P) RISPETTO A O

$$M = OP' \cdot F =$$

$$= OP \cdot \sin \theta \cdot F$$

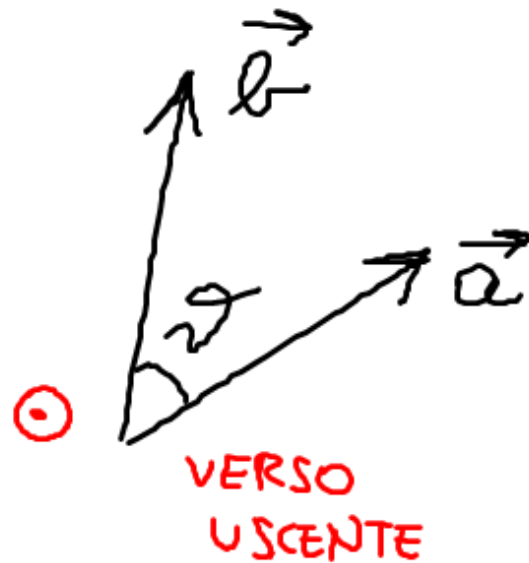
$$M = OP \cdot F \cdot \sin \theta$$



$$M = OP \cdot \underbrace{F \cdot \sin \theta}_{F_{\perp}}$$

MODULO DEL MOMENTO

PRODOTTO VETTORIALE \leadsto DA' UN VETTORE
COME RISULTATO



$$\vec{a} \times \vec{b}$$

- MODULO $|\vec{a} \times \vec{b}| = ab \sin \theta$

- DIREZIONE = PERPENDICOLARE AL
PIANO DI \vec{a} E \vec{b}

- VERSO = DATO DALLA
"REGOLA DELLA MANO DESTRA"

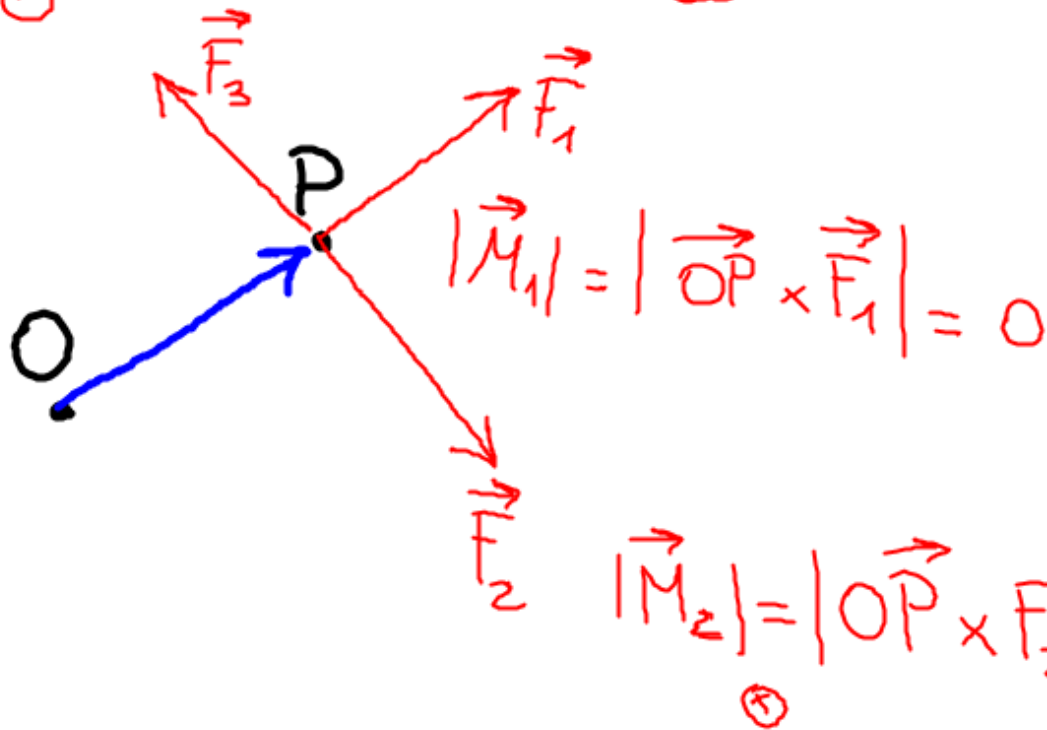




$$|\vec{a} \times \vec{b}| = ab \sin \theta$$

\Downarrow
 AREA DEL
 PARALLELOGRAMMA
 FORMATO DA
 \vec{a} E \vec{b}

$\vec{M}_3 \odot$



$$|\vec{M}_1| = |\vec{OP} \times \vec{F}_1| = 0$$

$$|\vec{M}_2| = |\vec{OP} \times \vec{F}_2| = OP \cdot F_2$$

⊗

PER IL PRODOTTO VETTORIALE NON VALE
LA PR. COMMUTATIVA

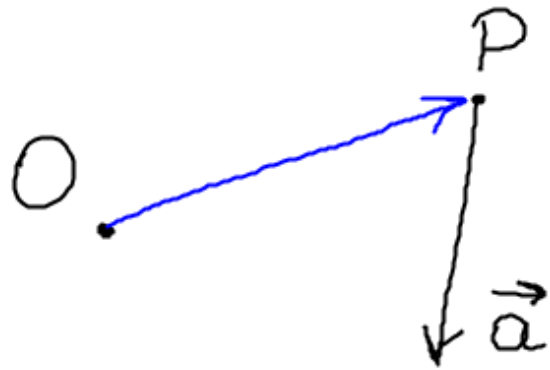
$$\vec{a} \times \vec{b} = -(\vec{b} \times \vec{a})$$

K È UNO SCALARE

$$K(\vec{a} \times \vec{b}) = (K\vec{a}) \times \vec{b} = \\ = \vec{a} \times (K\vec{b})$$

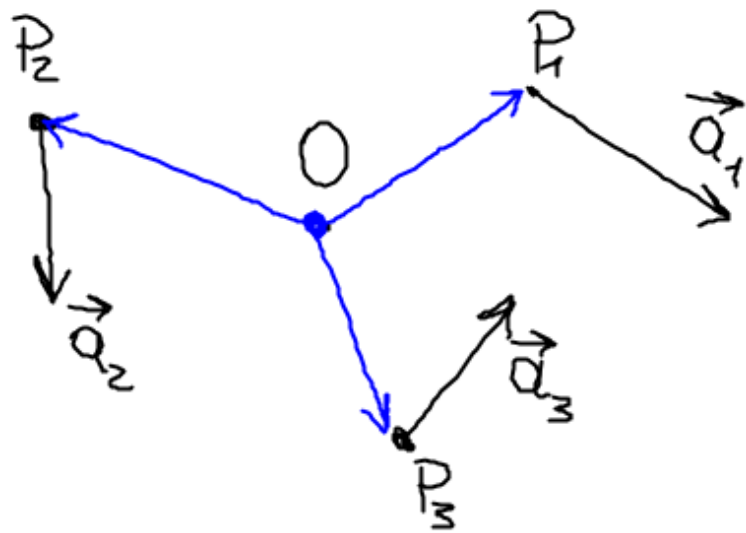
MOMENTO DI UN VETTORE APPLICATO RISPETTO A UN POLO O

1)



$$\vec{M} = \vec{OP} \times \vec{a}$$

2) SE HO PIÙ VETTORI



$$\vec{M}_{\text{TOT}} = \vec{OP}_1 \times \vec{a}_1 + \vec{OP}_2 \times \vec{a}_2 + \vec{OP}_3 \times \vec{a}_3$$