PRINCIPI DI NEWTON

I. INERZIA

II. $\sum_{i=1}^{n} \vec{F}_i = m\vec{a}$

III. AZIONE E REAZIONE

* PUNTI MATERIALI

→ PROBLEMA GENERALE

DATA $\sum_{i=1}^{n} \vec{F}_i \longrightarrow \vec{a}$

$\vec{F}_R$

1) INDIVIDUARE LE $\vec{F}_i$

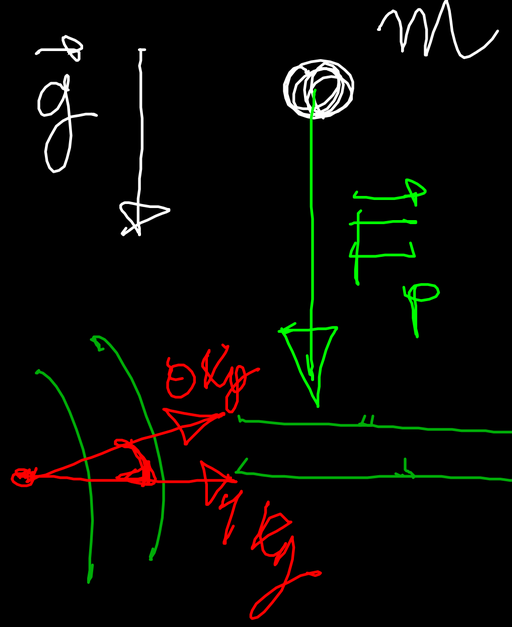
2) "COSTRUIRE" $\vec{F}_R = m\vec{a}$

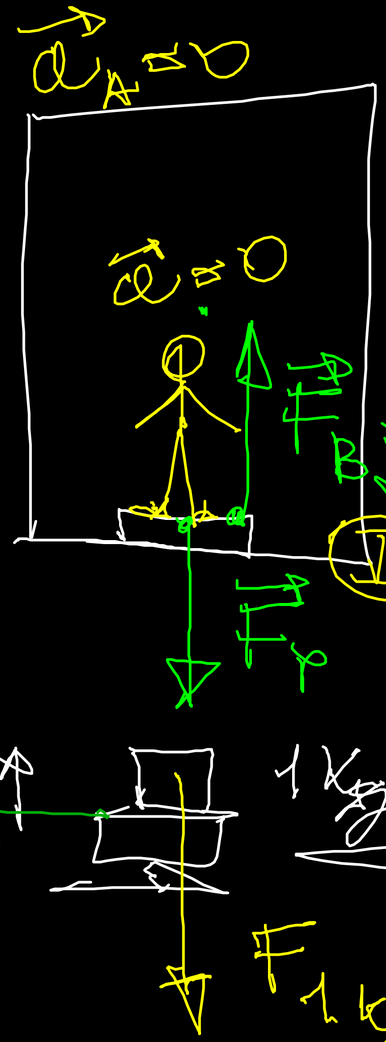
3) RICAVARE $\vec{a}$ DALLE EQ.

→ MODELLI MACROSCOPICI DI FORZE

FORZA PESO

$$\vec{F}_p = m\vec{g}$$

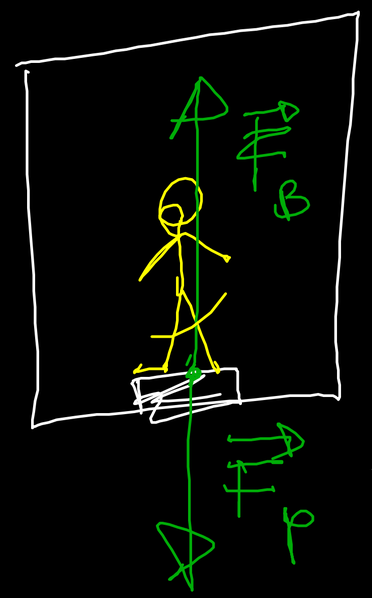




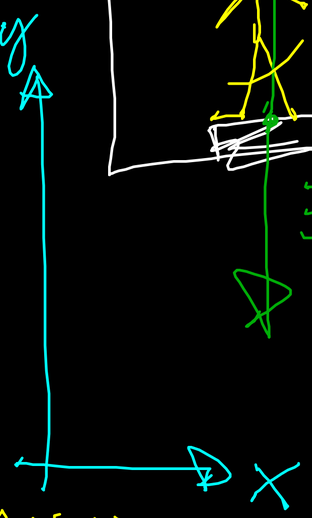
$$\overset{III}{\Rightarrow} \quad m = \frac{|\vec{F}_p|}{|\vec{g}|} = 66\ Kg$$

$$F_{1\,Kg} = 1\,Kg \cdot 9.81\,\frac{m}{s^2} = 9.81\ N$$

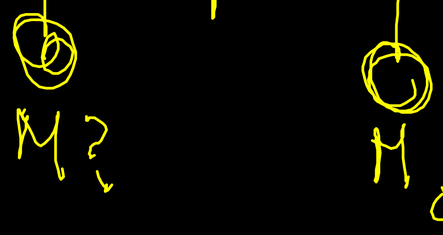
$m = 66\ Kg$

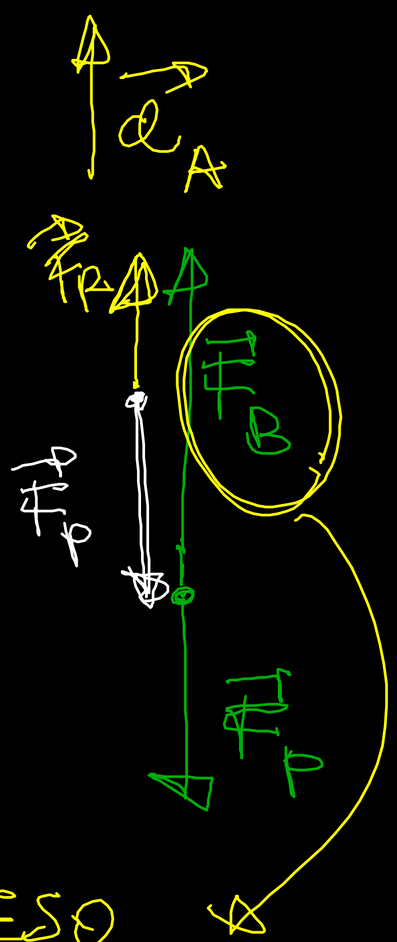


$\vec{a}_A$



BILANCIA





PESO APPARENTE

$m\vec{a}_A = \vec{F}_R = \vec{F}_B - \vec{F}_p \Rightarrow m a_y = F_{By} - F_{Py}$

$|\vec{F}_B| = 733\ N$

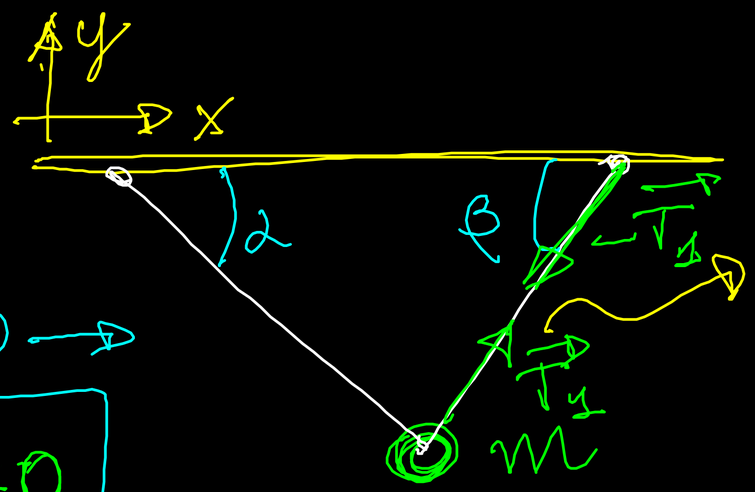
$|\vec{F}_p| = 651\ N$

$82\ N$

$a_y = a_A = \frac{82\ N}{66\ Kg}$

$= 1.2\ m/s^2$

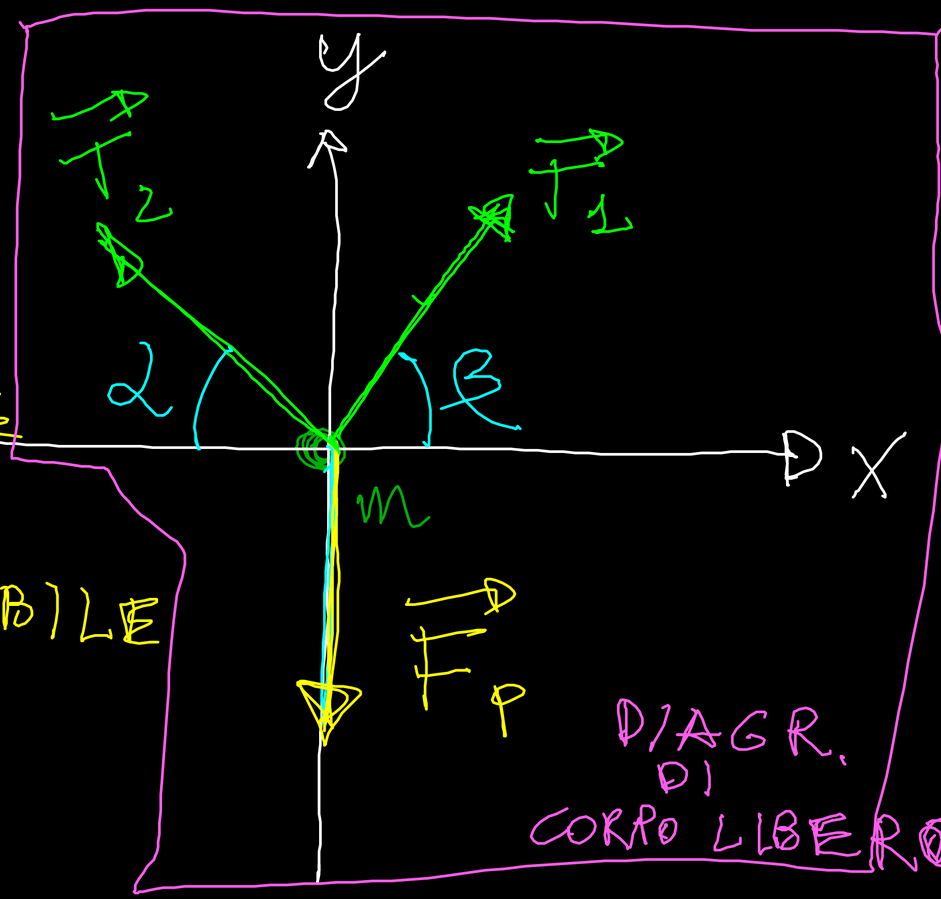
$\frac{a_A}{g} = \frac{1.2}{9.8} \approx 0.1$



$t=0 \rightarrow$ $\vec{a}=0$

"TENSIONE"

FUNE IDEALE
- $m_f \simeq 0$
- INESTENSIBILE



i) SCHIZZO "QUANTITATIVO"

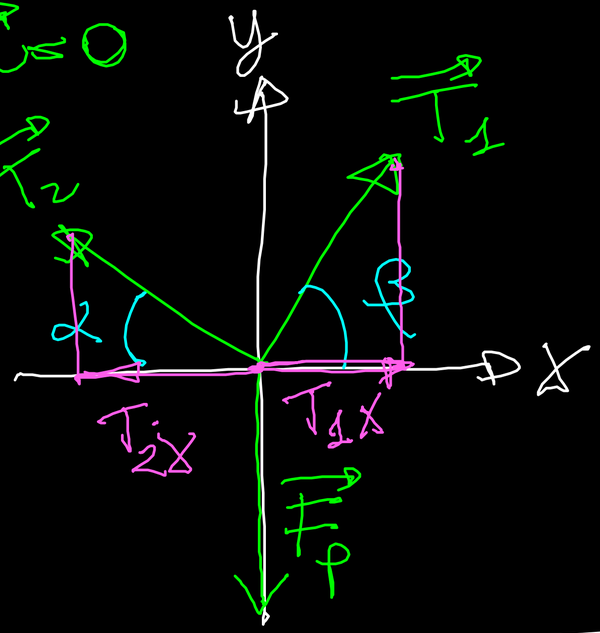
- ii) FORZE → DIAGRAMMA DI CORPO LIBERO

iii) COSTR. $\vec{F} = m\vec{a}$ → EQUAZIONI

iv) SOL. DELLE EQ → RISULTATO

- v) ANALISI CRITICA

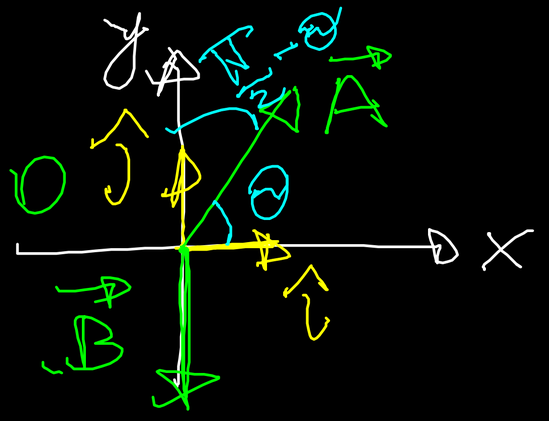
$\vec{a}=0$



$$\sum_{i=1}^{n} \vec{F}_i = \vec{F}_R = m\vec{a}$$

$$\begin{cases} \sum F_{ix} = m a_x \\ \sum F_{iy} = m a_y \end{cases}$$

(X) $T_{1x} - T_{2x} = m a_x$



$B_x = 0$

$\vec{A}\cdot\vec{B} = |\vec{A}||\vec{B}|\cos\theta$

$A_x = \vec{A}\cdot\hat{i} = |\vec{A}|\cos\theta$

$A_y = \vec{A}\cdot\hat{j} = |\vec{A}|\cos(\frac{\pi}{2}-\theta) = |\vec{A}|\sin\theta$

(X) $T_1\cos\beta - T_2\cos\alpha = 0$

(Y) $T_1\sin\beta + T_2\sin\alpha - mg = 0$

$m = 8{,}4\ kg$

$\alpha = 27^\circ$

$\beta = 55^\circ$

$$T_2 = \frac{mg}{\sin\beta + \cos\beta \tan\alpha} = 48\,N$$

$$T_1 = \frac{mg}{\sin\alpha + \cos\alpha \tan\beta} = 74\,N$$

$$F_p = (8{,}4\ kg)(10) \simeq 84\,N$$