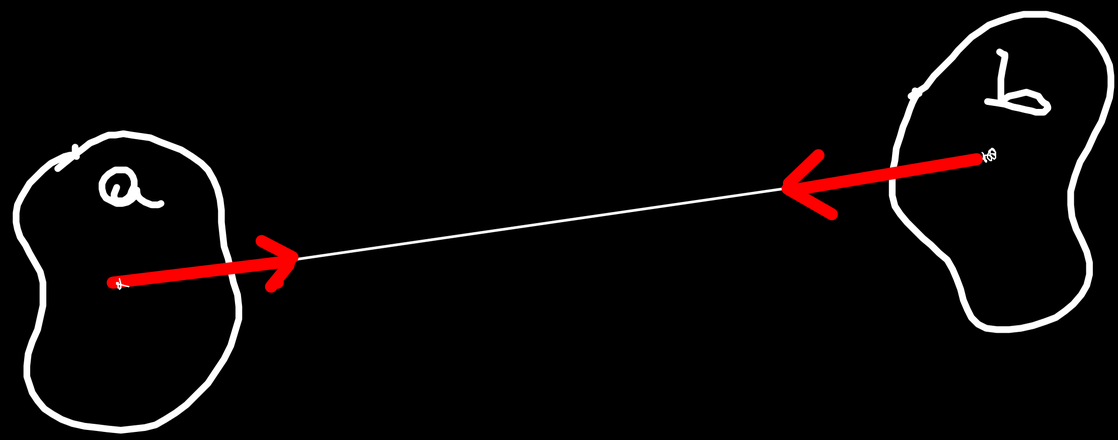
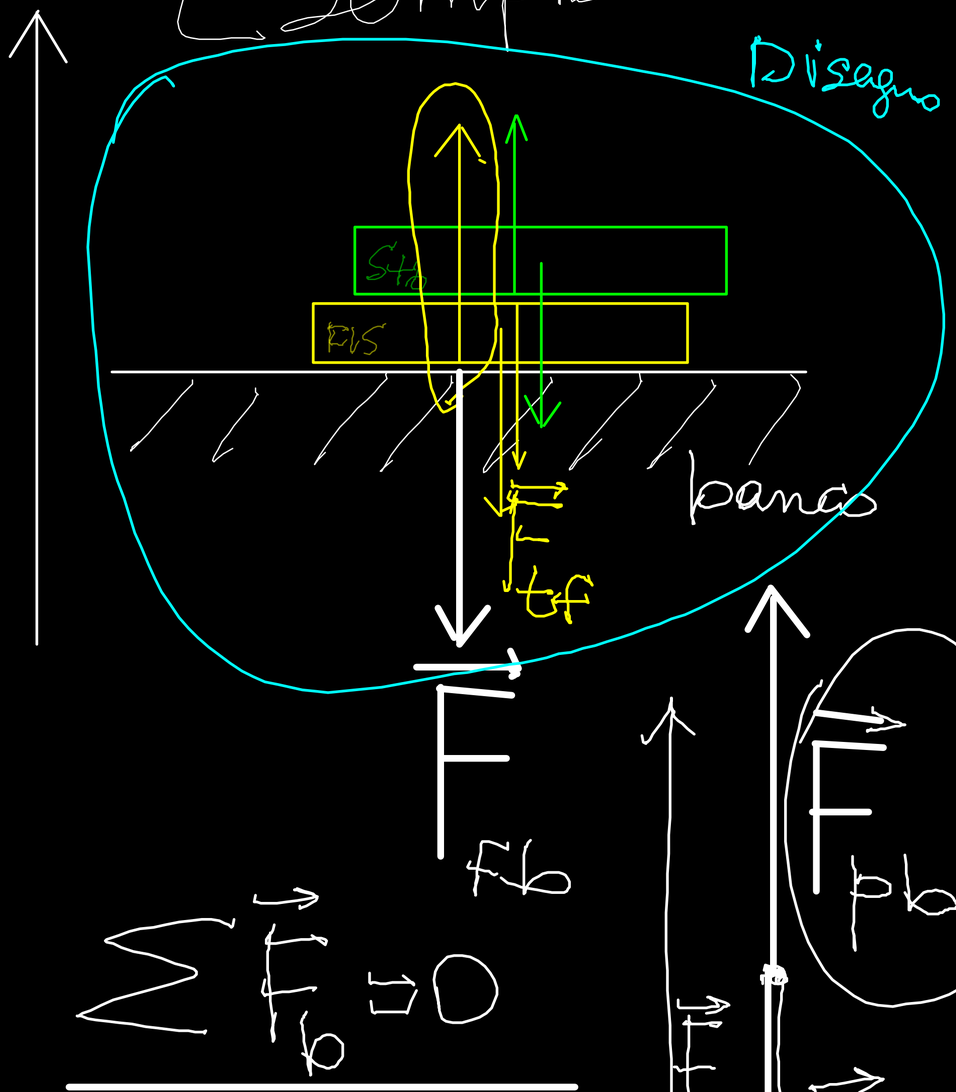
in un sistema inerziale

$$\sum \vec{F} = m\vec{a}$$



Esempio 5.6

Disegno



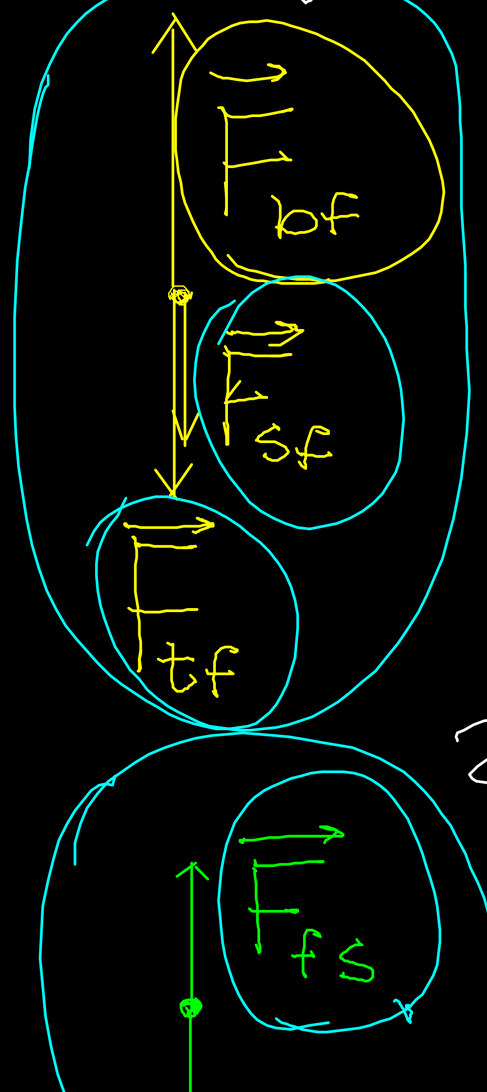
$$\sum \vec{F}_b = 0$$

1° diagr. corpo libero

libro

Fisica

$$\sum \vec{F}_{bf} = 0$$



2° diagr. corpo libero x

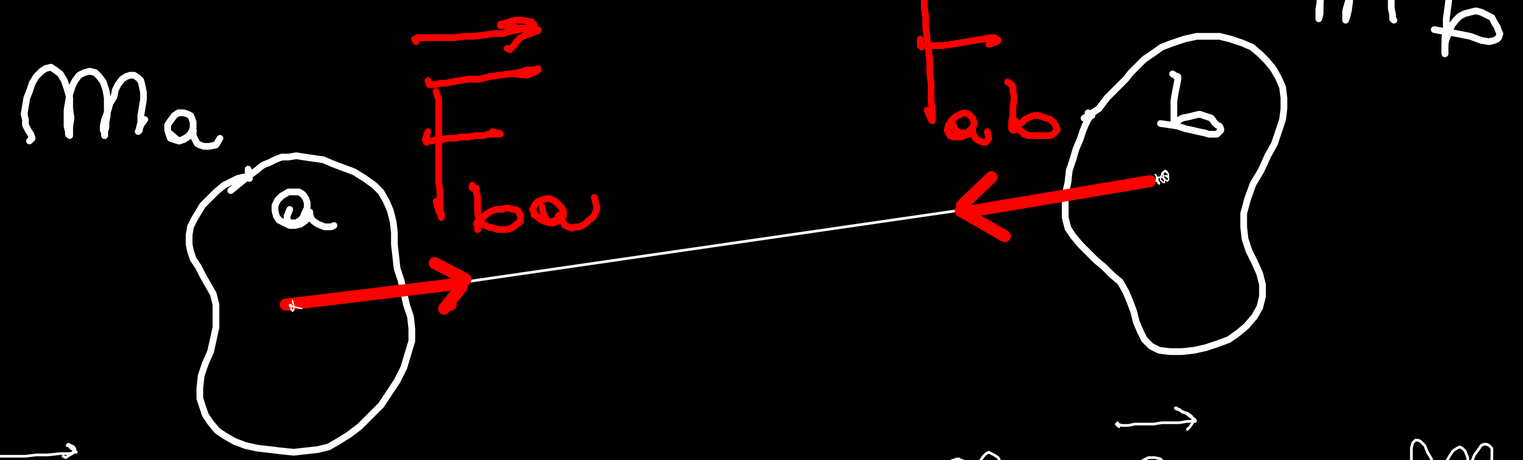
l. stata

$$\sum \vec{F}_s = 0$$

Def. di massa 2° e 3° pr.

in un sistema inerziale

$$\sum \vec{F}_i = m_i \vec{a}_i \qquad i = a, b$$

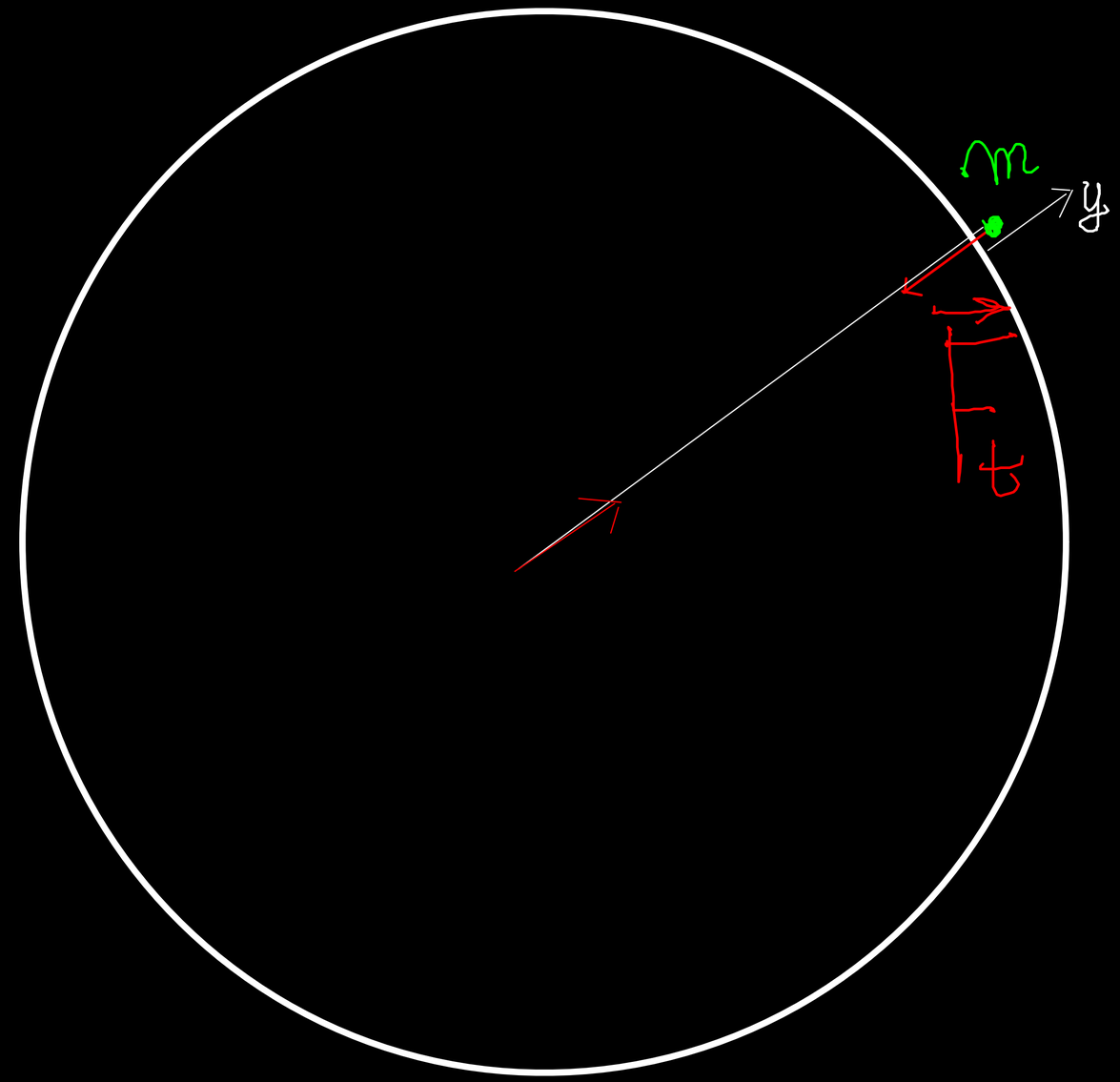


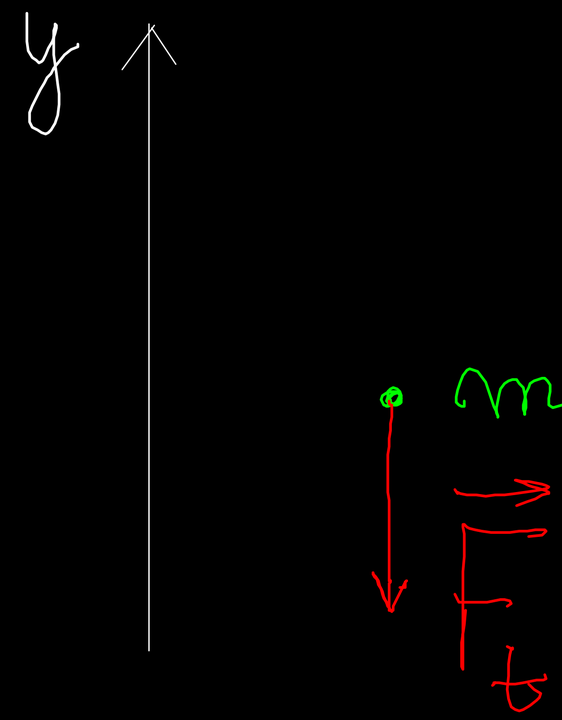
$$\begin{cases} \vec{F}_{ba} = m_a \vec{a}_a \\ \vec{F}_{ab} = m_b \vec{a}_b \\ \vec{F}_{ba} = -\vec{F}_{ab} \end{cases}$$

$$m_a \vec{a}_a = -m_b \vec{a}_b$$

in modulo $m_a a_a = m_b a_b$

$$m_b = \frac{m_a a_a}{a_b}$$


m
y
T
mg



$$\vec{a} = \vec{g}$$

$$\sum \vec{F} = m\vec{a}$$

$$\vec{F}_t = m\vec{g} \qquad g = 9.8 \frac{m}{s^2}$$

Risoluzione dei problemi di meccanica

- Preferibilmente uso <u>sist. inerziali</u>

$$\sum \vec{F} = m\vec{a}$$ se no ...

Sono note tutte le forze.

<u>Posso mettermi</u> ad es. in coord. cart.

$$\begin{cases} x & \sum F_x = m a_x \\ y & \sum F_y = m a_y \\ z & \sum F_z = m a_z \end{cases} \longrightarrow \begin{cases} \sum F_x = m \dfrac{d^2 x}{dt^2} \\ y = \\ z = \end{cases}$$

$x(t)$	$x_0 = x(t=0)$	$v_{x0} = v_x(t=0)$
$y(t)$	y_0	v_{y0}
$z(t)$	z_0	v_{z0}

Procedimento da seguire

1) Disegno

2) I diagrammi a corpo libero

3) Componenti x, y, z 2^a legge N

4) Risolvo eq. cercando <u>poi</u> espressioni analitiche

5) Sostituisco valori numerici, cifre sign.

Procedimento inverso

$$\sum \vec{F} = m\vec{a}$$

Conosco alcune delle forze e $\vec{a}$

Posso determinare le altre forze

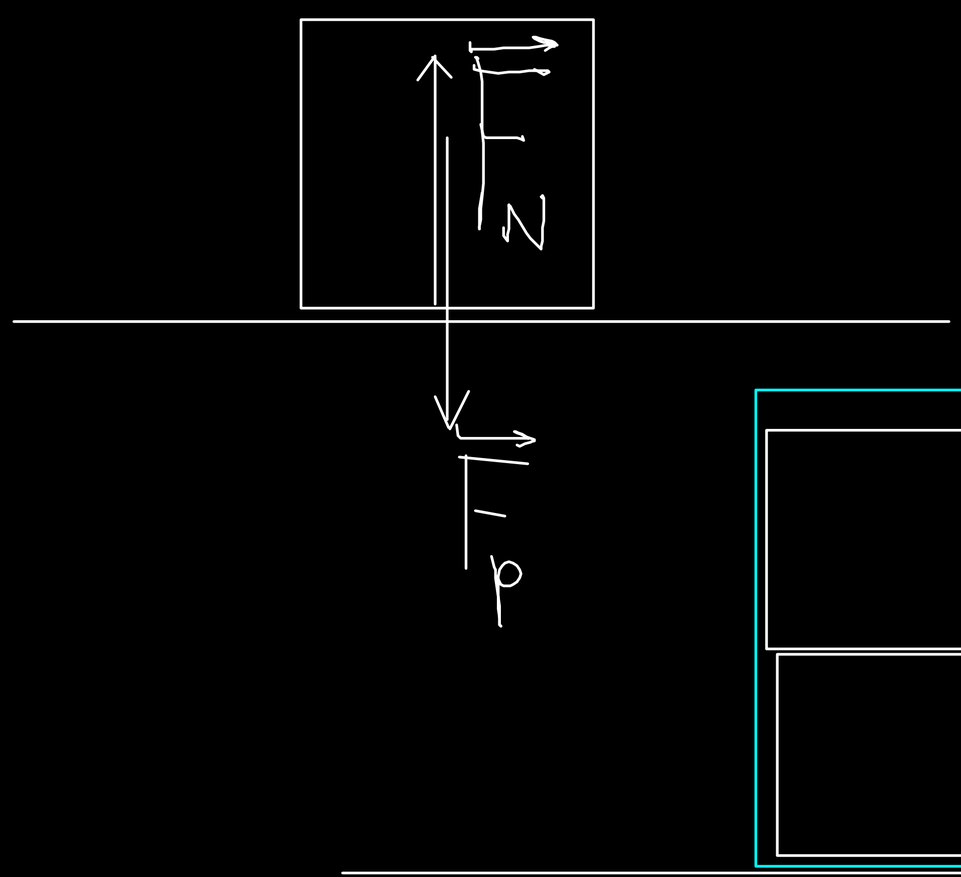
Forze di contatto

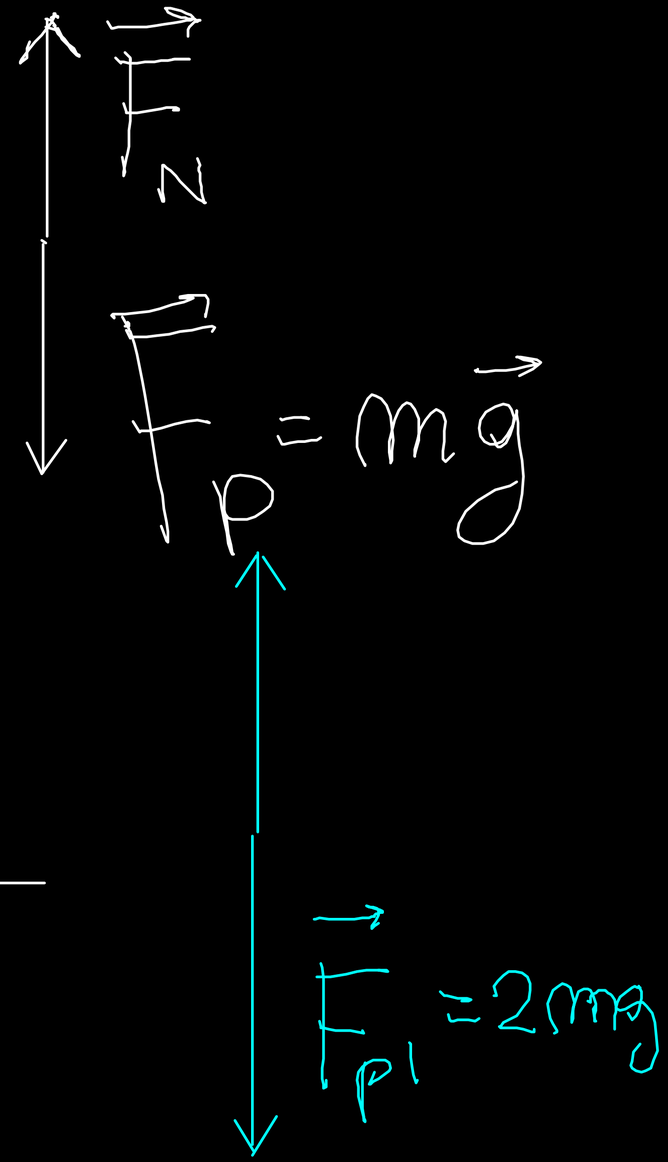
Impediscono ai corpi di compenetrarsi

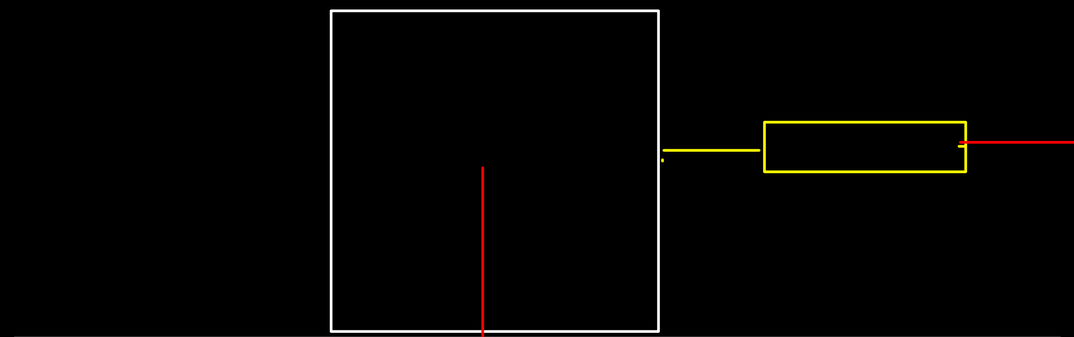
origine microscopica e. m.

Trattazione macroscopica.

Semplificazione Scomporre $\begin{cases} \perp \to N \\ // \to \text{Attrito} \end{cases}$


$\vec{F}_N$
$\vec{F}_p$

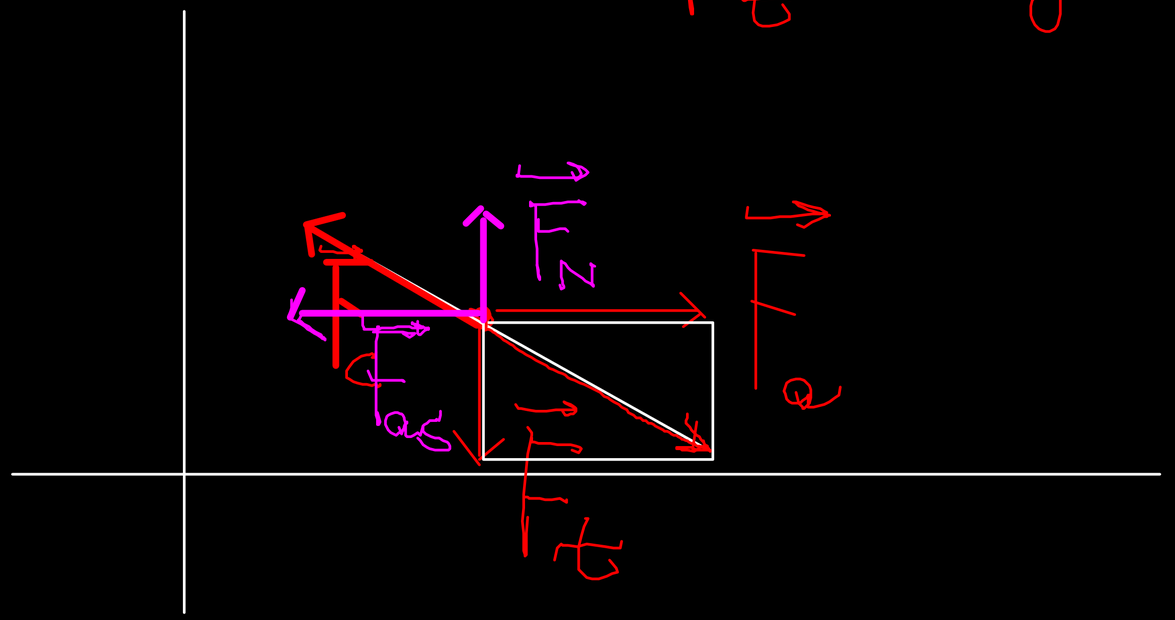

$\vec{F}_N$
$\vec{F}_p = m\vec{g}$
$\vec{F}_{p1} = 2m\vec{g}$



$\vec{F}_a$

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

$0 < |\vec{F}_a| < F_{a,max}$



$\vec{v} = 0$

$\Rightarrow \vec{a} = 0$

$\sum \vec{F} = 0$