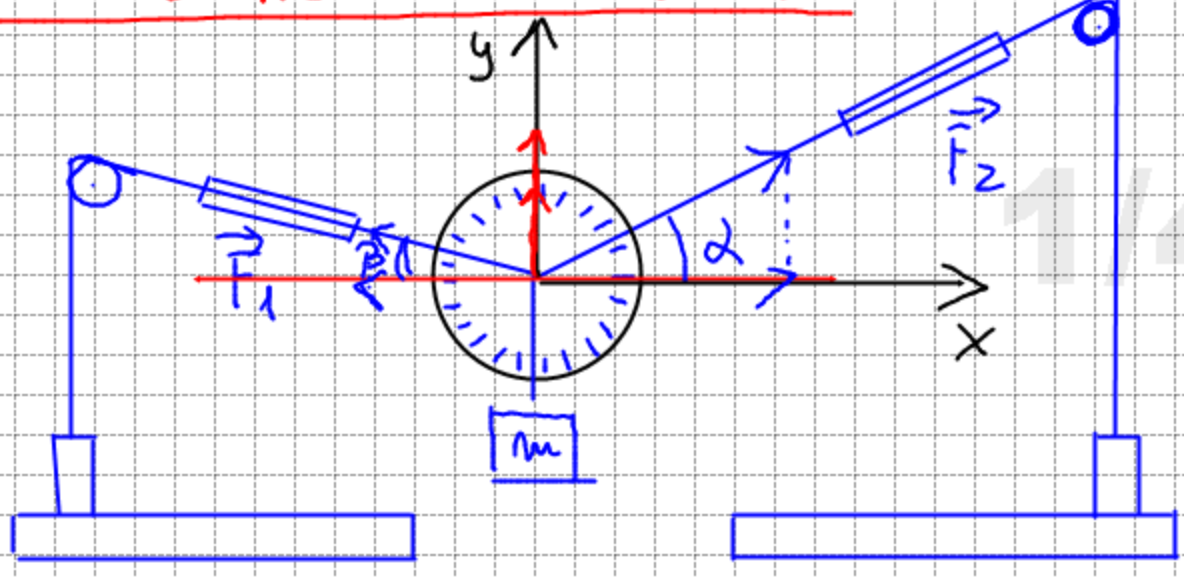
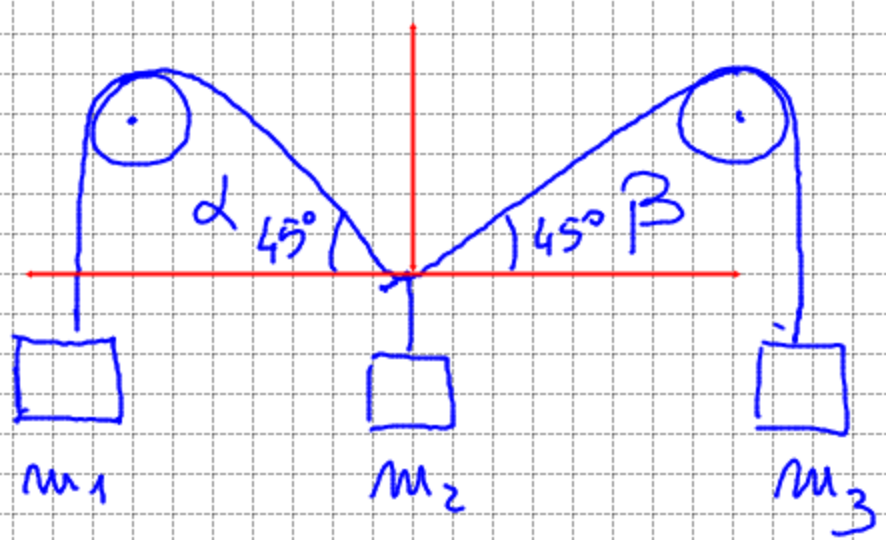
PARALLELOGRAMMA DELLE FORZE



$\vec{F}$.

$$m = \frac{\bar{F}_{1y} + \bar{F}_{2y}}{g} \quad \text{con} \quad \bar{F}_{1y} = \bar{F}_1 \operatorname{sen}\alpha \quad \bar{F}_{2y} = \bar{F}_2 \operatorname{sen}\beta$$



$m_2 = m_1 + m_3$

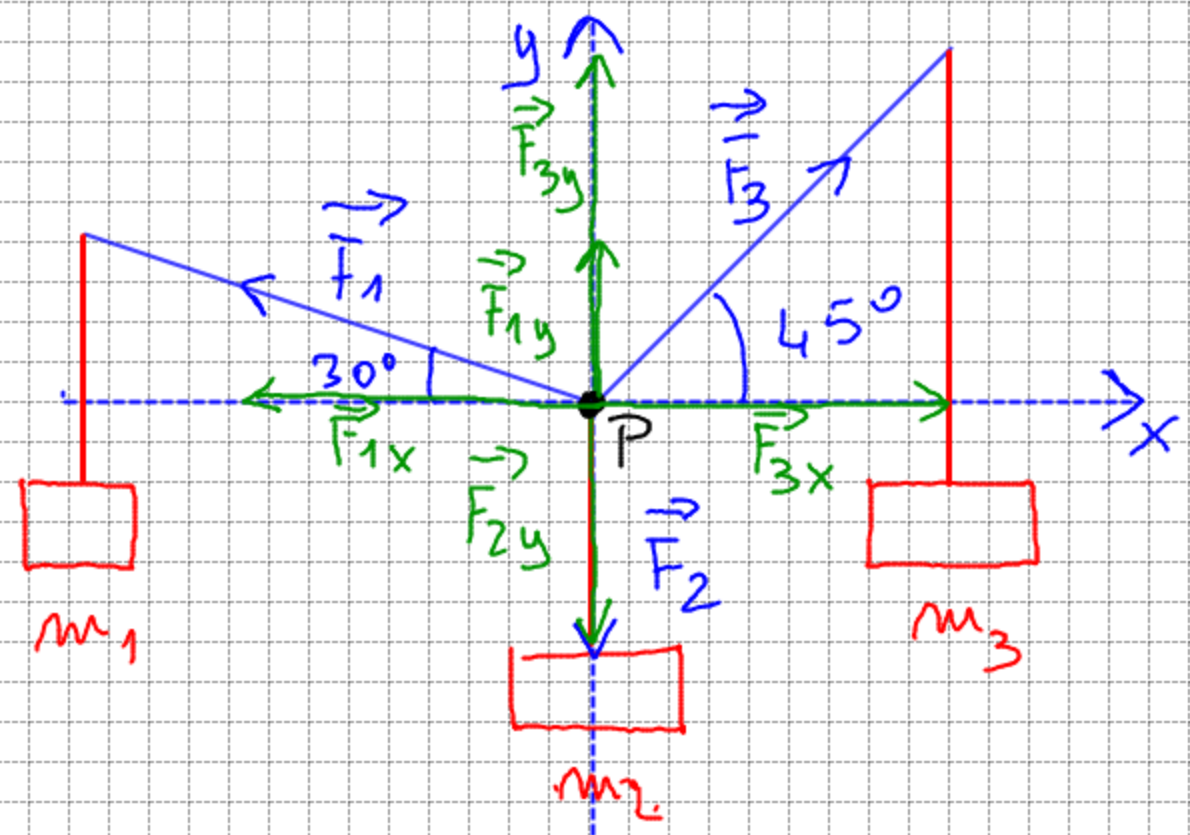
$P_1 + P_3 = P_2$

$m_1 g + m_3 g = m_2 g$

ESERCIZIO

1) $\alpha = 30°$ $\beta = 45°$ Trova m_1, m_2, m_3

2) $\alpha = 30°$ $\beta = 60°$ Trova m_1, m_2, m_3



imPosto:

su x $\quad \bar{F}_{3x} = \bar{F}_{1x} \quad \left(-\vec{F}_{1x} + \vec{F}_{3x} = 0\right)$

su y $\quad \bar{F}_{1y} + \bar{F}_{3y} = \bar{F}_{2y}$

$\bar{F}_1 = m_1 g \quad \bar{F}_2 = m_2 g \quad \bar{F}_3 = m_3 g$

$\bar{F}_{1x} = \bar{F}_1 \cos 30° = m_1 g \cdot 0{,}866$

$\bar{F}_{1y} = \bar{F}_1 \operatorname{sen} 30 = m_1 g \cdot 0{,}5$

$\bar{F}_{2x} = 0$

$\bar{F}_{2y} = \bar{F}_2 = m_2 g$

$\bar{F}_{3x} = \bar{F}_3 \cos 45° = m_3 g \cdot 0{,}71$

$\bar{F}_{3y} = \bar{F}_3 \operatorname{sen} 45° = m_3 g \cdot 0{,}71$

$\vec{F}_{3x} = \vec{F}_{1x}$ $\quad m_3 g \cdot 0{,}71 = m_1 g \cdot 0{,}87$

$$m_3 = \frac{\cos 30^\circ}{\cos 45^\circ} = 1{,}22\, m_1$$

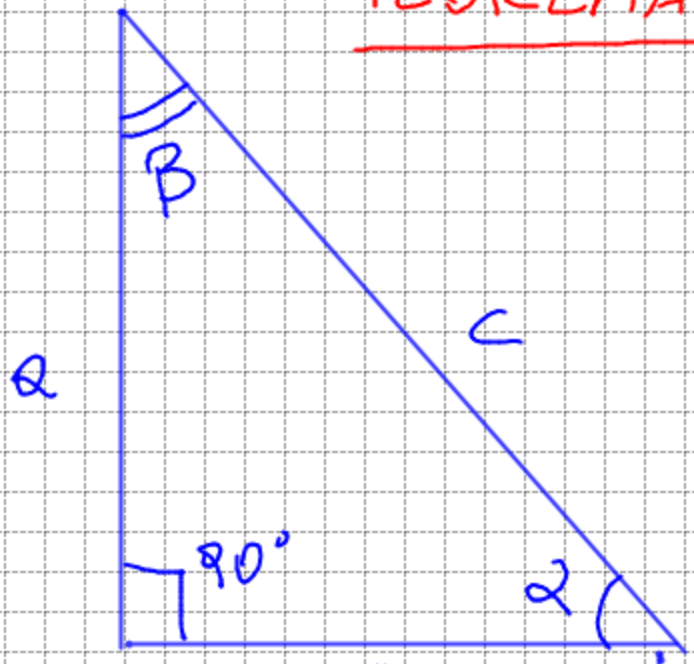
$\vec{F}_{1y} + \vec{F}_{3y} = \vec{F}_{2y}$ $\quad m_1 g \operatorname{sen} 30^\circ + m_3 g \operatorname{sen} 45^\circ = m_2 g$

$$\frac{1}{2} m_1 + 1{,}22\, m_1 \cdot 0{,}71 = m_2$$

$$0{,}5\, m_1 + 0{,}866\, m_1 = m_2$$

$$1{,}37\, m_1 = m_2$$

TEOREMA TG



$a = b\,Tg\,\alpha$

$b = a\,Tg\,\beta$

Un cateto è uguale all'altro cateto per la tangente dell'angolo opposto al primo cateto.

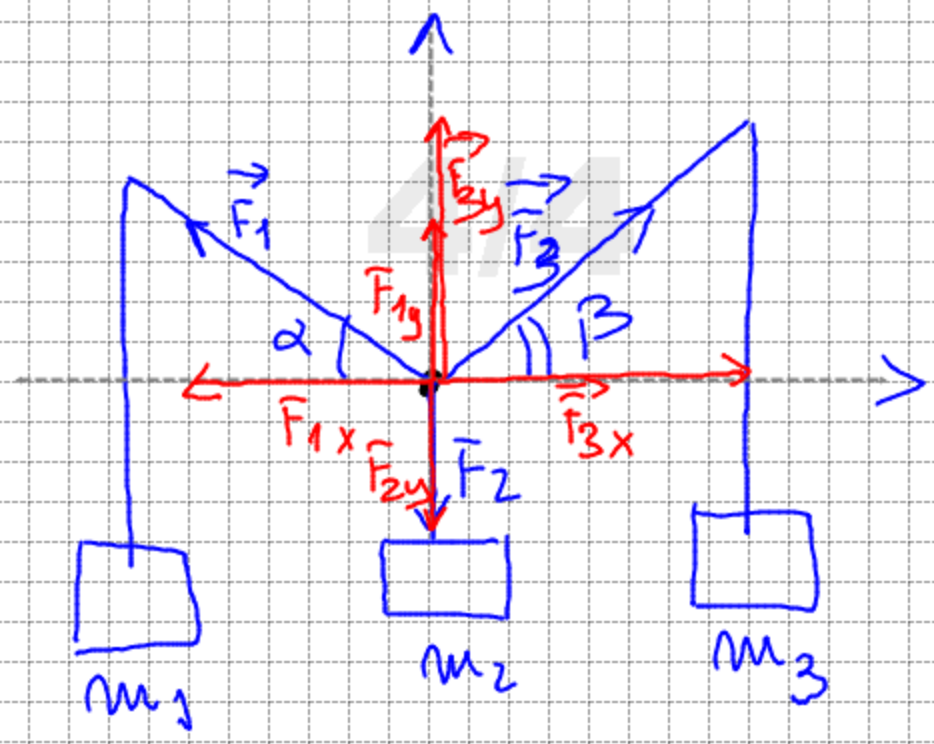
$m_1 = 15\,g$

$m_2 = 30\,g$

$m_3 = 25\,g$

$\alpha = 30°$

$\beta = ?$



$$Tg\alpha = \frac{sen\,\alpha}{\cos\alpha}$$

$$\vec{F}_{1x} = \vec{F}_{3x} \longrightarrow \vec{F}_1 \cos\alpha = \vec{F}_3 \cos\beta$$

$$\vec{F}_{1y} + \vec{F}_{3y} = \vec{F}_{2y} \longrightarrow \vec{F}_1\, sen\,\alpha + \vec{F}_3\, sen\,\beta = \vec{F}_2$$

$$\begin{cases} m_1 \cos 30° = m_3 \cos\beta \\ m_1\, sen\,30° + m_3\, sen\,\beta = m_2 \end{cases}$$

$$\cos\beta = \frac{m_1}{m_3} \quad 0{,}87 = 0{,}52$$

$$\beta = 58°\,41'\,37''$$