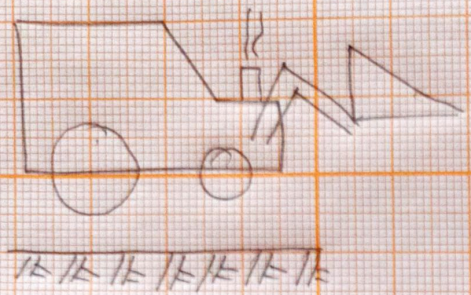
Un tractor de dos mil libras se utiliza para levantar 900 libras de grava, determina la reacción de cada una de sus llantas.



$$[(-2100\,lb)120'']+(-900)\,110'')+[(RB)60$$

$$RB-42,000\,ton-99,000+RB\,60''=0$$

$$RB-60$$

$$RB=\frac{-141,000}{60\,ton}=+2,350\,lb$$

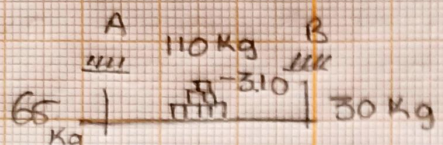
$$2,350-2100+900$$

$$RA=+650$$

COMPROBACIÓN

$$650-2,100+2,350-900=0$$

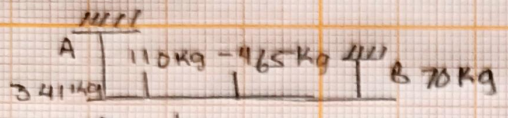
ESTATICA



$$P = \frac{w \cdot L}{2}$$

1. $P = -\frac{310\ Kg/m\ (3.0\ m)}{2}$

$P = -465\ Kg$



2. D.C.L

L/2
up = 30/2 = 1.50 m
up = 1.50 m + 1.0 m = 2.50

3. RB

$\Sigma MX = 0$

$(-10\ Kg \cdot 10\ m) + (-465\ Kg \cdot 2.50\ m) + (RB \cdot 50\ m) + (-70\ Kg \cdot 6.20\ m) = 0$

$-110\ Kg - 1162.50\ Kg \cdot m + RB \cdot 50\ m) = 434\ Kg\ m = 0$

$-1,706.50\ Kg \cdot m + RB\ 50\ m = 0$

$RB = \frac{1,706.50\ Kg\ m}{50\ m} = 341.3\ K$

4. RA

$\Sigma FY = 0$ $\quad RA - 110\ Kg - 465 + 341.3\ Kg - 70\ Kg = 0$

$RA - 303.7\ Kg = 0$

$RA = 303.7\ Kg$

COMPROBACIÓN

$\Sigma FX = 0$ $\quad 303.7\ Kg - 10\ Kg - 465\ Kg + 341.3\ Kg - 70\ K$

$65\ Kg + 30\ Kg = 0$

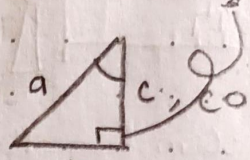
$95\ Kg = 0$

Teorema

$a^2 = b^2 + c^2$

$a = \sqrt{b^2 + c^2}$

Si tiene Triangulo rectangulo, se podra hacer la formula

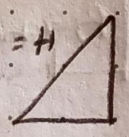


Razones Trigonometricas

$\text{Sen } \theta = \frac{CO}{H}$

$\text{Cos } \theta = \frac{CA}{H}$

$\tan \theta = \frac{CO}{CA}$



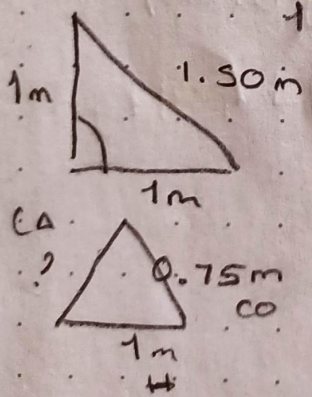
$H = \sqrt{1.50^2 m + 1.80^2 m}$

$H = \sqrt{2.25 m^2 + 3.24 m^2}$

$H = \sqrt{5.49 m^2}$

No se vuelve a sacar el ^{2}

$H = 2.343 m$



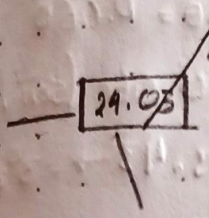
$\text{Sen } \theta = 0.75$

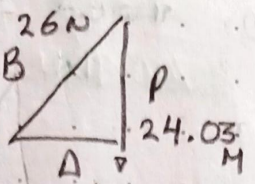
$\theta = 48.59 \times 2 = 97.180$

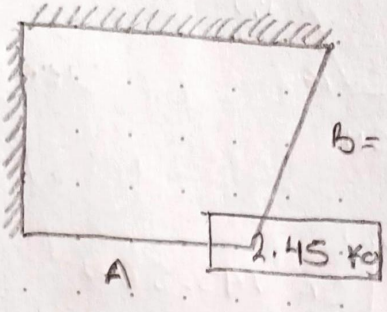
$97° 10' 50.72''$

Tecla 0,,,

Coalcula la tensión de la cuerda horizontal, sabiendo que la tensión de la cuerda B es de 26 N.







$\times 9.81 m/s^2 = 24.03 N$

9.927 N

$H = \sqrt{a^2 + b^2}$

$26^2_M = \sqrt{24.03\ m^2 + A^2}$

$26\ N^2 = 24.03\ N^2 + A^2$ — Al cuadrado

$676\ N^2 = 577.44\ N^2 + A^2$

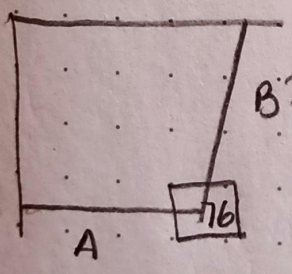
AL CUADRADO

$A^2 = 577.44\ N^2$

$676\ N^2 - 577.44\ N^2 = A^2$

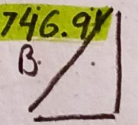
$98.56\ N^2 = A^2 \rightarrow \sqrt{98.56\ N^2} = 9.927\ N = A$

Se resta



① $76\ kg\ (9.81\ m/s^2) = 745.56\ N$

② D. C. L



③ Hipotenusa

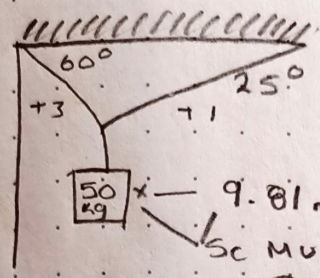
$H^2 = 45^2\ N + 745.56^2\ N$

$H = 2,025\ N^2 + 555,859.7136$

$H = \sqrt{557,884.7136\ N^2}$

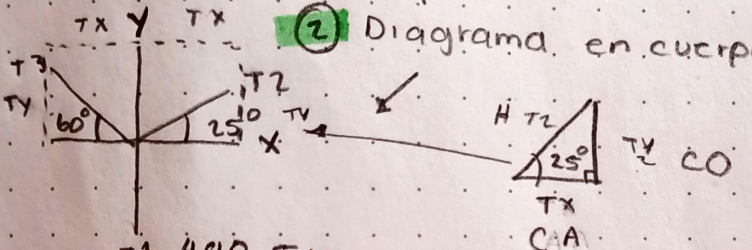
$H = 746.91\ N$

Un saco de cemento de 50 kg de masa, cuelga en equilibrio de 3 cuerdas, dos de las cuerdas forman angulos de 60° y 25° con horizontal. Hayar la tensión de las cuerdas.



(1) Fuerza gravitacional = 490.5 N

9.81 m/s² se multiplican



(2) Diagrama en cuerpo Libre

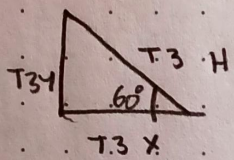
$T1 = 490.5\ N$

$\operatorname{Sen}\theta 25° = \frac{T2Y}{T2}$

$T2Y = \operatorname{Sen} 25° (T2)$

$T2X = \operatorname{Cos} 25° (T2)$

(4)



$\operatorname{Sen} 60° = \frac{T3Y}{T3}$

$T3Y = \operatorname{Sen} 60° (T3)$

$\operatorname{Cos} 60° = \frac{T3X}{T3}$

$T3X = \operatorname{Cos} 60° (T3)$

(5) $\Sigma FX = 0$

$T2X + T3X = 0$

$\operatorname{Cos} 25° (T2) + \operatorname{Cos} 60° (T3) = 0$

$\operatorname{Cos} 25° (T2 = \operatorname{Cos} 60° (T3)$

$T2 = \frac{\operatorname{Cos} 60° (T3)}{\operatorname{Cos} 25°} = 0.551 (T3)$

⑥ $\Sigma F_y = 0$

$T_{2y} + T_{3y} - T_1 = 0$

$\text{Sen } 25^\circ (T_2) + \text{Sen } 60^\circ (T_3) - 490.5\ N = 0$

$\text{Sen } 25^\circ (0.551\ T_3) + \text{Sen } 60^\circ (T_3) = 490.5\ N$

$0.238 \cdot T_3 + 0.866\ T = 490.5\ N$

$1.099 \cdot T_3 = 490.5\ N$

T_3

$T_3 = \frac{490.5\ N}{1.099} = 446.315\ N$

⑦ T_2

$0.551\ (446.315\ N)$

$T_2 = 245.919\ N$