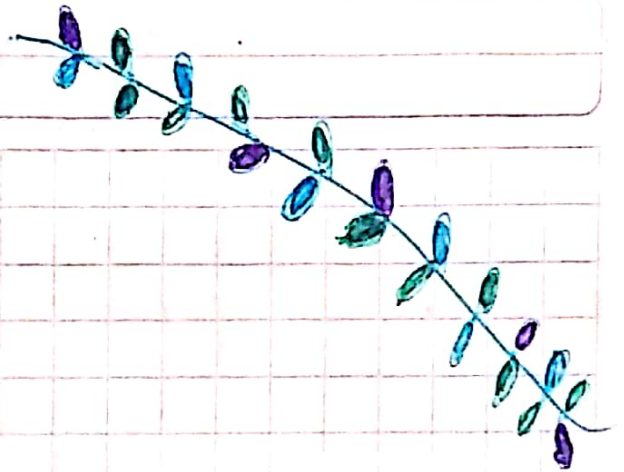


UDS



NOMBRE DE LA ALUMNA:

Cruz Sarquiz Angelica Guadalupe

NOMBRE DEL PROFESOR: Garcia Lopez

Pedro Alberto

NOMBRE DE LA MATERIA: Estática en la Arquitectura

CUATRIMESTRE: 3 Cuatrimestre

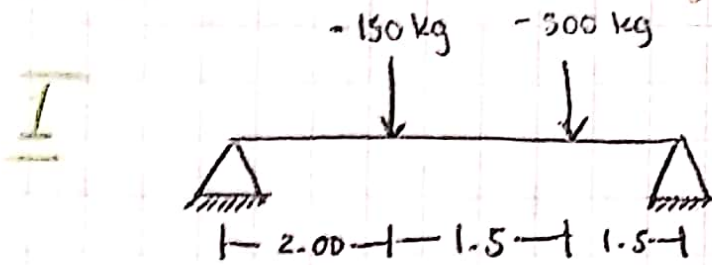
PROYECTO: Ejercicios de Estática

CARRERA: Lic Arquitectura

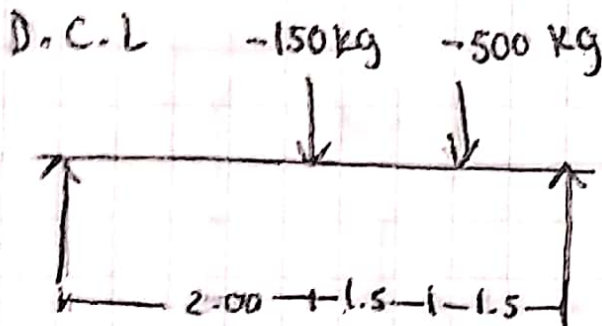
FECHA: 07/07/21

Ejercicios de Estática

Cálcula las reacciones en los apoyos en los siguientes elementos



$$\begin{aligned}\sum F_x &= 0 \\ \sum F_y &= 0 \\ \sum M &= 0\end{aligned}$$



$$\sum M = dP$$

$$A_y(0) + (-150 \text{ kg})(2 \text{ m}) + (-500 \text{ kg})(3.5) + B_y(5 \text{ m}) = 0$$

$$-300 \text{ kgm} - 1750 \text{ kgm} + B_y \cdot 5 \text{ m} = 0$$

$$-2050 \text{ kgm} + B_y \cdot 5 \text{ m} = 0$$

$$B_y \cdot 5 \text{ m} = 2050 \text{ kgm}$$

$$B_y = \frac{2050 \text{ kgm}}{5 \text{ m}}$$

$$\underline{B_y = 410 \text{ kg}}$$

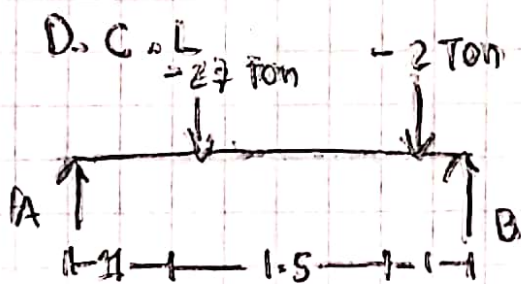
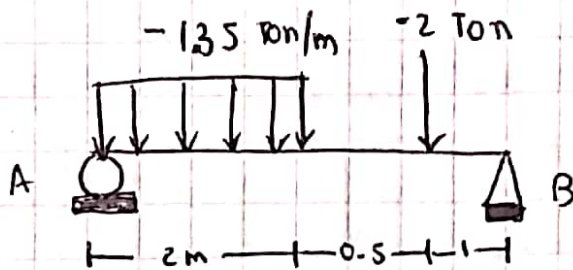
$$\sum F_y = A_y + B_y - 150 \text{ kg} - 500 \text{ kg} = 0$$

$$\sum F_y = A_y + 410 \text{ kg} - 150 \text{ kg} - 500 \text{ kg} = 0$$

$$\sum F_y = A_y + 410 \text{ kg} - 650 \text{ kg} = 0$$

$$\sum F_y = A_y - 240 \text{ kg} = 0$$

$$A_y = 240 \text{ kg}$$



$$P = w \cdot L$$

$$= (-1.35 \text{ ton/m})(2 \text{ m})$$

$$P = -27 \text{ ton}$$

$$L_p = L/2$$

$$L_p = 2/2$$

$$L_p = 1 \text{ m}$$

$$\sum M = 0$$

$$\sum M = A(0) - 27 \text{ ton}(1 \text{ m}) - 2 \text{ ton}(2.5) + B_y(3.5 \text{ m}) = 0$$

$$= -27 \text{ tonm} - 5 \text{ tonm} + B_y 3.5 \text{ m} = 0$$

$$= -32 \text{ tonm} + B_y 3.5 \text{ m} = 0$$

$$B_y 3.5 \text{ m} = 32 \text{ tonm}$$

$$B_y = \frac{32 \text{ tonm}}{3.5 \text{ m}}$$

$$\underline{B_y = 9.14 \text{ ton}}$$

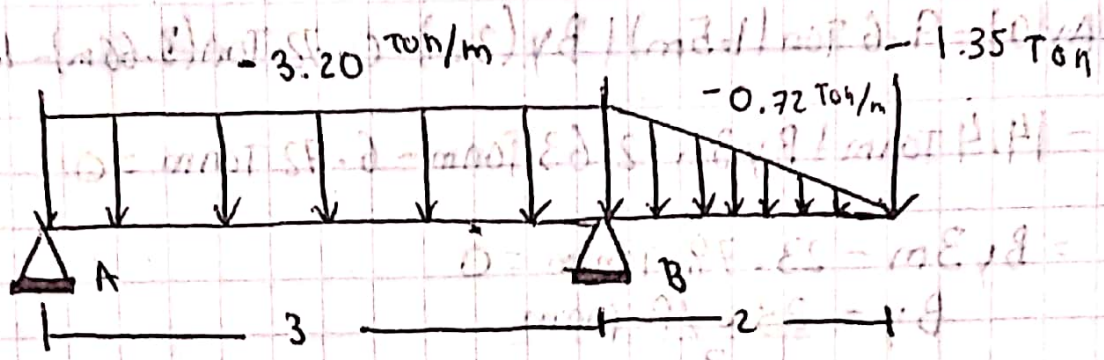
$$\sum F_y = A_y + B_y - 27 \text{ ton} - 2 \text{ ton} = 0$$

$$\sum F_y = A_y + 9.14 \text{ ton} - 27 \text{ ton} - 2 \text{ ton} = 0$$

$$\sum F_y = A_y + 9.14 \text{ ton} - 29 \text{ ton}$$

$$= A_y - 19.86 \text{ ton} = 0$$

$$\underline{A_y = 19.86 \text{ ton}}$$



Rectangular

$$P = w \cdot L$$

$$P = (-3.20 \text{ Ton/m})(3 \text{ m})$$

$$P = -9.6 \text{ Ton}$$

$$u_p = L/2$$

$$u_p = 3/2$$

$$u_p = 1.5 \text{ m}$$

Triangular

$$P = (w \cdot L) / 2$$

$$P = (-0.72 \text{ Ton/m})(2 \text{ m})$$

$$P = -1.44 \text{ Ton}$$

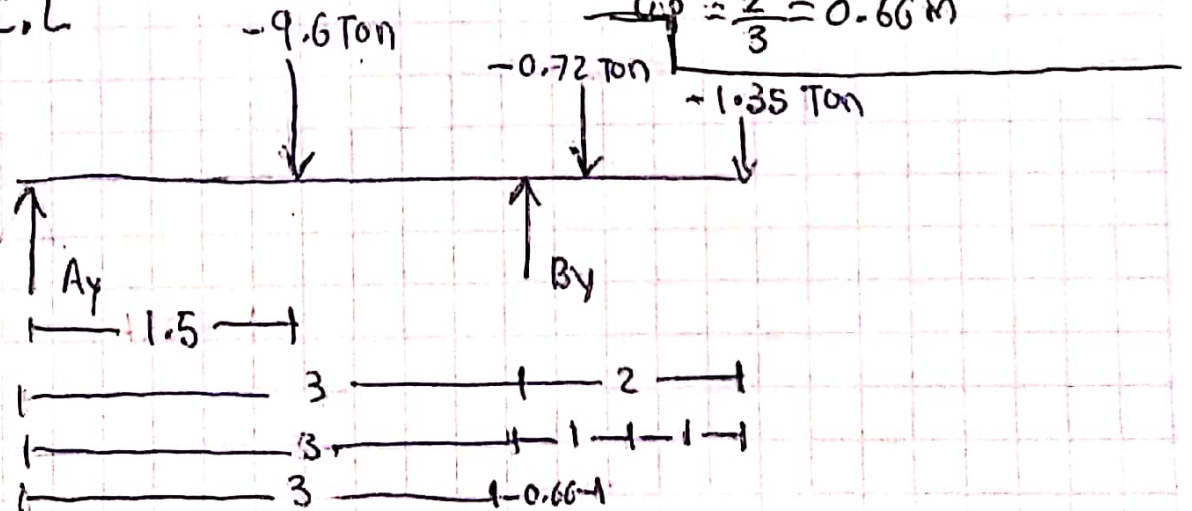
$$P = -0.72 \text{ Ton}$$

$$u_p = 1/3 \cdot L(B)$$

$$u_p = 1/3 \cdot 2$$

$$u_p = \frac{2}{3} = 0.66 \text{ m}$$

D.C.L



$$\sum M = 0$$

$$A_y(0) - 9.6 \text{ Ton}(1.5 \text{ m}) + B_y(3 \text{ m}) - 0.72 \text{ Ton}(3.66 \text{ m}) - 1.35 \text{ Ton}(5 \text{ m})$$

$$= -14.4 \text{ Tonm} + B_y 3 \text{ m} - 2.63 \text{ Tonm} - 6.72 \text{ Tonm} = 0$$

$$= B_y 3 \text{ m} - 23.78 \text{ Tonm} = 0$$

$$B_y = \frac{23.78 \text{ Tonm}}{3 \text{ m}}$$

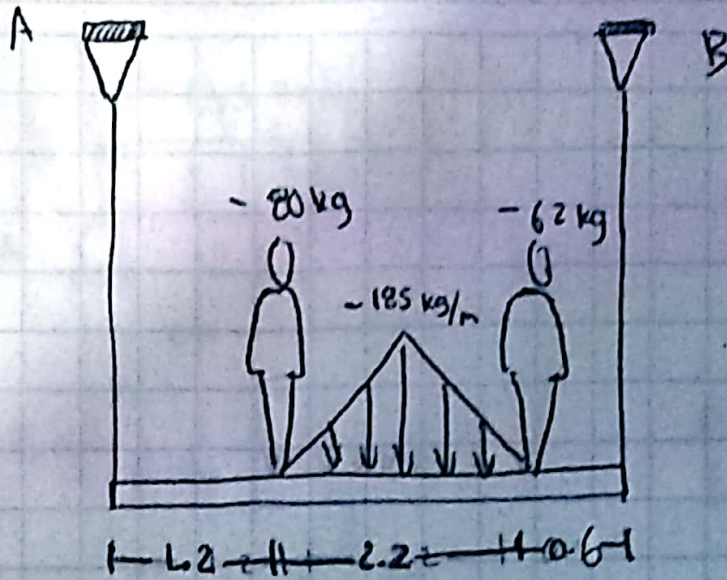
$$B_y = 7.92 \text{ Ton}$$

$$\sum F_y = A_y + B_y - 9.6 \text{ Ton} - 0.72 \text{ Ton} - 1.35 \text{ Ton} = 0$$

$$A_y + 7.92 \text{ Ton} - 11.67 \text{ Ton} = 0$$

$$A_y - 3.75 = 0$$

$$A_y = 3.75 \text{ Ton}$$



$$P = (w \cdot L/2)$$

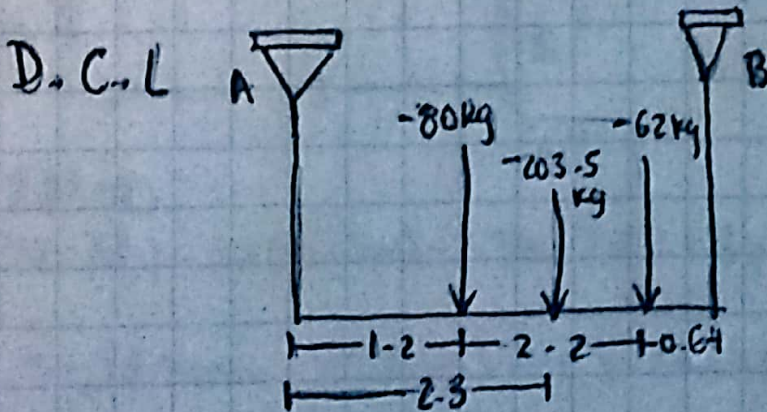
$$U_p = L/2$$

$$P = \frac{(-185 \text{ kg/m} \cdot 2.2 \text{ m})}{2}$$

$$P = -203.5 \text{ kg}$$

$$U_p = \frac{2.2 \text{ m}}{2}$$

$$L_{U_p} = 1.1 \text{ m}$$



$$\begin{aligned} \sum M = A_y(0) - 80 \text{ kg}(1.2 \text{ m}) - 203.5 \text{ kg}(2.3 \text{ m}) - 62 \text{ kg}(3.4 \text{ m}) + B_y(4 \text{ m}) &= 0 \\ = -96 \text{ kgm} - 468.05 \text{ kgm} - 210.8 \text{ kgm} + B_y \cdot 4 &= 0 \\ = -774.85 \text{ kgm} + B_y \cdot 4 \text{ m} &= 0 \end{aligned}$$

$$B_y \cdot 4.2 \text{ m} = 774.85 \text{ kgm}$$

$$B_y = \frac{774.85 \text{ kgm}}{4 \text{ m}}$$

$$\underline{B_y = 193.71 \text{ kg}}$$

$$\sum F_y = A_y + B_y - 80 \text{ kg} - 203.5 \text{ kg} - 62 \text{ kg} = 0$$

$$\sum F_y = A_y + 193.71 \text{ kg} - 203.5 \text{ kg} - 62 \text{ kg} = 0$$

$$\sum F_y = A_y + 193.71 - 345.5 \text{ kg} = 0$$

$$\sum F_y = A_y - 151.79 \text{ kg} = 0$$

$$\underline{A_y = 151.79 \text{ kg}}$$