UDS

PASIÓN POR EDUCAR

NOMBRE DE ALUMNO: JULIO ALBERTO AGUILAR VERA

NOMBRE DEL PROFESOR: PEDRO ALBERTO GARCIA

NOMBRE DEL TRABAJO: EQUILIBRIO DE UN CUERPO RIGIDO

MATERIA: ESTATICA

GRADO: TERCER CUATRIMESTRE

GRUPO: "A"

COMITÁN DE DOMÍNGUEZ CHIAPAS A 9 DE JULIO DE 2021.

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- **PROFESOR:** PEDRO ALBERTO GARCÍA.

- **ALUMNO:** JULIO ALBERTO AGUILAR VERA.
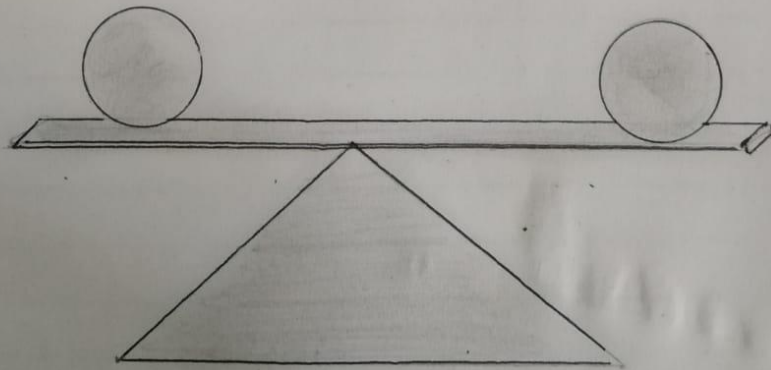
- **ACTIVIDAD:** EQUILIBRIO DE CUERPO RÍGIDOS.
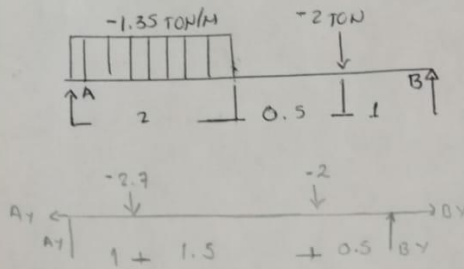
- **MATERIA:** ESTÁTICA PARA LA ARQUITECTURA

- **GRADO:** TERCER CUATRIMESTRE.

- **GRUPO:** "A"

- **LUGAR:** COMITÁN DE DOMÍNGUEZ. CHIAPAS.

- **FECHA:** 09 /. JULIO / 2021

Free body diagram:
-1.35 TON/M
-2 TON
A
2   0.5   1
B

-2.7
-2
Ay
Ay   1 +   1.5   + 0.5   BY

$\Sigma Fx = 0 \rightarrow Ax + Bx = 0$

$\Sigma M = 0 \rightarrow \Sigma HA = 0$

COMPROBACIÓN

$+2.134 TON - 2.7 TON - 2 TON$
$+ 2.566 TON = 0$

$+4.7 TON - 2.7 TON - 2TON = 0$

$+ 4.7 TON - 4.7 TON = 0$ ✓

$-2.7 TON (1M) - 2 (2.5) + BY (3M) = 0$

$-2.7 TON/M - 5 TON/M + BY \cdot 3M = 0$

$- 7.7 TON/M + BY \cdot 3M = 0$

$BY = 3M = 7.7 TON/M$

$BY = \dfrac{7.7 TON M}{3 M} = 2.566 TON$

$\Sigma Fy = 0$

$AY - 2.7 TON - 2 TON + 2.566 TON$

$AY = 4.7 TON + 2.566 TON = 0$

$AY = -2.134 TON = 0$

$AY = +2.134 TON$

- 3.20 TON/M

- 1.35 TON

- 0.72 TON/M

A   3   B   2

-9.6 TON

- 0.72 TON   -1.35 TON

Δ

↑   ↑ By

—1.5—

|___3___ + 2 +

|— 3 —| 1 +1+

|— 3 —| +0.66+

TRIANGULAR

$P = (w.l)/2$

$P = \dfrac{(-0.72 \text{ TON/M})(2)}{2}$

$P = \dfrac{-1.44 \text{ TON}}{2}$

$P = -0.72 \text{ TON}$

$UP = 1/3 L \ (B)$
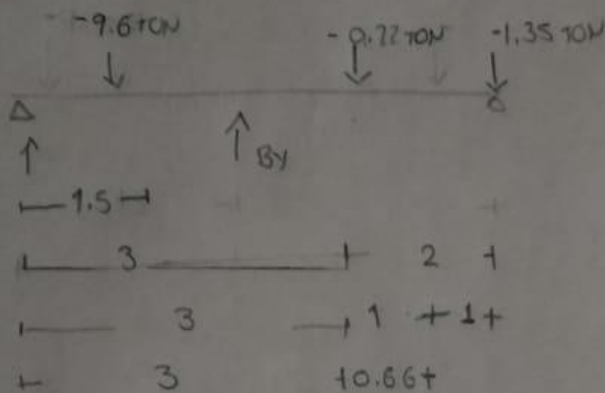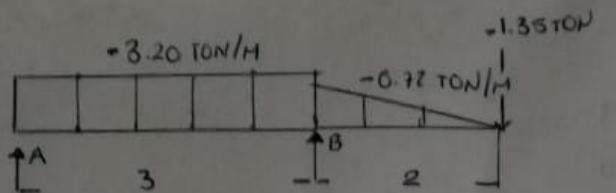
$UP = 1/3 - 2$

$UP = 2/3 = 0.66 M$

RECTANGULAR

$P = w.l$

$P = (-320 \text{ TON/M})(3M)$

$P = -9.6 \text{ TON}$

$UP = L/2$

$UP = 3 - 2$

$UP = 1.5 M$

$\Sigma M = 0$

$A Y (0) - 9.6 \text{ TON}(1.5M) + BY(3M) - 0.72 \text{ TON}(0.66M)$

$-1.35 \text{ TON}(2M) =$

$Ay = 14.4 \text{ TON/M} + By3M - 2.63 \text{TON/M} - 6.92 \text{ TON/M} = 0$

$By3M - 23.78 \text{ TON/M} = 0$

$BY = \dfrac{23.78 \text{ TON/M}}{3 M} = By = \underline{7.92 \text{ TON}}$

$\Sigma Fy = Ay + By - 9.6 \text{ TON} - 0.72 \text{ TON} - 1.35 \text{ TON} = 0$

$Ay + 7.92 \text{ TON} - 11.67 \text{ TON} = 0$

$Ay = \underline{3.75 \text{ TON}}$

-150KG   -500KG

↓   ↓

△ + 2.0 + 1.5 + 1.5 △

-150KG -500KG

↓   ↓

+ 2.00 + 1.5 + 1 + 1.5

$\Sigma M = 0P$
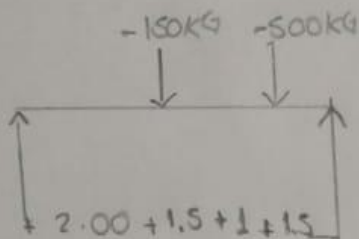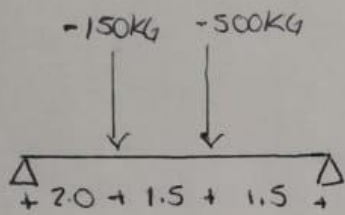
$Ay(0) + (-150kg)(2M) + (-500kg)(3.5)$

$+ By (5M) = 0$

$-300 kG/M - 1750 KG/M + By - 5M = 0$

$- 2050 KG/M + By \cdot 5M = 0$

$By \cdot 5M = 2050 KG M$

$By = \dfrac{2050 \text{ KHt}}{5M} = 410 KG$

$\Sigma Fy = Ay + By - 150KG - 500KG = 0$

$\Sigma Fy = Ay + 410 KG - 150KG - 500KG = 0$

$\Sigma Fy = Ay + 410 KG - 650KG = 0$

$\Sigma Fy = Ay - 240 KG = 0$

$FAy = 240 KG$
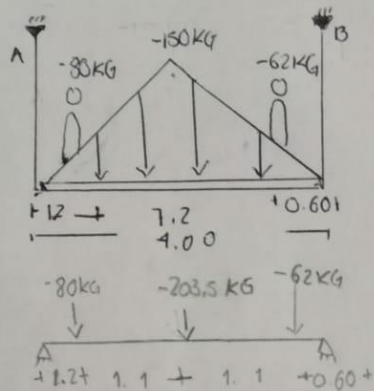
$$P = (w \cdot L / 2)$$

$$UP = L/2$$

$$P = \frac{185 \, KG/\cancel{M} \cdot 2.2 \, KG/\cancel{M}}{2} = \underline{203.5 \, KG}$$

$$UP = \frac{2.2}{2} = \underline{1.1 \, M}$$

$$\Sigma FX = 0$$

$$\Sigma M = 0$$

$$-80 \, KG \cdot (1.20M) - 203.5 KG \, (2.30 \, M) - 62 \, KG \, (3.40 M) + BY \cdot (4.0M)$$

$$-96 \, KG/M - 468.05 \, KG/M - 210.8 \, KG/M + BY \cdot (4.0M) = 0$$

$$-774.85 \, KG/M + BY \cdot (4.0M) = 0$$

$$BY = \frac{774.85 \, KG/M}{4 \, M} = \underline{193.7125 KG}$$

$$\Sigma FY = 0$$

$$AY = -80KG - 203.5KG - 62 \, KG + 193.7125 KG = 0$$

$$AY = -345.5 \, KG + 193.7125 \, KG = 0$$

$$AY = -151.7875 = 0$$

$$AY = \underline{151.7875}$$

$$151.7875 \, KG - 80 \, KG - 203.5 KG - 62KG + 193.7125KG = 0$$

$$\underline{\Sigma FY = 0}$$