

Mi Universidad

ESTATICA

Nombre del estudiante: Carlos Jesus Ordoñez Castro

Nombre del tema: Sumatoria de fuerzas y momentos

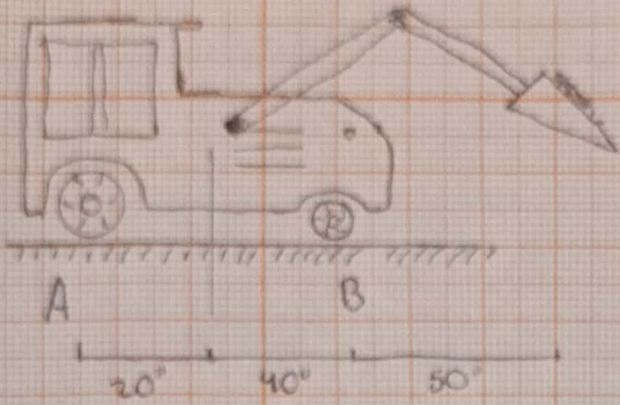
Parcial: I

Nombre de la Materia: ESTATICA

Nombre del profesor: Pedro Alberto Garcia Lopez

Nombre de la licenciatura: arquitectura

Cuatrimestre: 3



un tractor de 2100 Libras se utiliza para levantar 900 Libras de grava. Determina la relación entre la llanta trasera A y la delantera B.

$$\sum F_x = 0$$

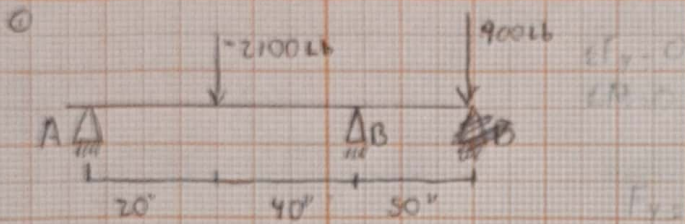
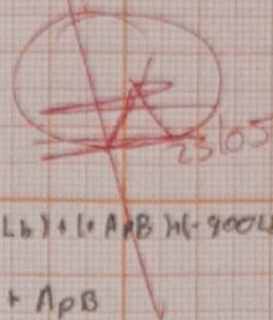
$$\sum M = 0$$

$$\sum F_y = 0 \quad (2)$$

$$(\sum F_y) + (-2100 \text{ lb}) + (\sum F_y) - (900 \text{ lb})$$

$$A_pA - 3000 \text{ lb} + A_pB$$

$$A_pA + A_pB = 3000 \text{ lb}$$



$$\sum M = 0$$

$$(-2100 \text{ lb} \cdot 20'') + (A_pB \cdot 60'') + (-900 \text{ lb} \cdot 100'')$$

$$(-42000 \text{ lb} \cdot \text{ft}) + (A_pB \cdot 60'') + (-99000 \text{ lb} \cdot \text{ft})$$

$$(-141000 \text{ lb} \cdot \text{ft}) + (A_pB \cdot 60'') = A_pB = \frac{141000 \text{ lb} \cdot \text{ft}}{60'') = 2350 \text{ lb} \quad (2 = 1175 \text{ lb})$$

$$A_pA + A_pB = 3000 \text{ lb}$$

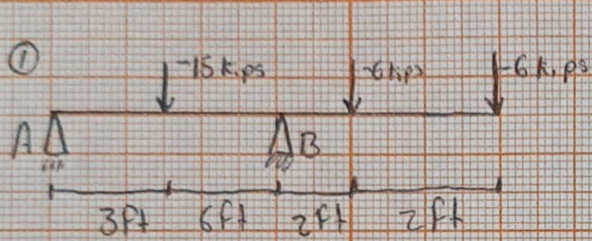
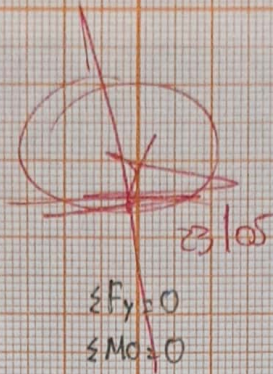
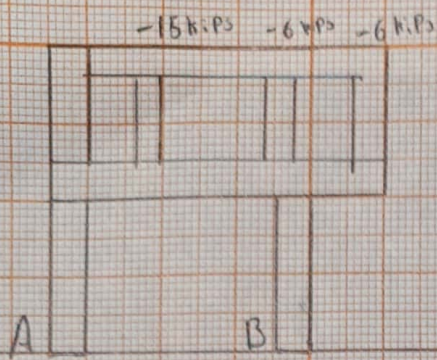
$$A_pA + (2350 \text{ lb}) = 3000$$

$$A_pA = 3000 - 2350 \text{ lb}$$

$$A_pA = 650 \text{ lb} / 2 = 325 \text{ lb}$$

$$650 \text{ lb} - 2100 \text{ lb} + 2350 \text{ lb} - 900 \text{ lb} = 0$$

$$3000 \text{ lb} - 3000 \text{ lb} = 0$$



②

$\sum F_y = 0$

$$A_p - 15 \text{ kips} + A_{pB} - 6 \text{ kips} - 6 \text{ kips}$$

$$A_p + A_{pB} - 27 \text{ kips} = 0 \quad A_p + A_{pB} = +27 \text{ kips}$$

③

$\sum M_o = 0$

$$(-15 \text{ kips} \times 3 \text{ ft}) + (A_{pB} \cdot 9 \text{ ft}) + (-6 \text{ kips} \cdot 11 \text{ ft}) + (-6 \text{ kips} \cdot 13 \text{ ft})$$

$$(-45 \text{ kips} \cdot \text{ft}) + (A_{pB} \cdot 9 \text{ ft}) + (-66 \text{ kips}) + (-78 \text{ kips} \cdot \text{ft})$$

$$(189 \text{ kips} \cdot \text{ft}) + (A_{pB} \cdot 9 \text{ ft}) = 0 \quad A_{pB} = \frac{-189 \text{ kips} \cdot \text{ft}}{9 \text{ ft}} = 21 \text{ kips}$$

④

$$A_p + A_{pB} = 27 \text{ kips}$$

$$A_p + (21 \text{ kips}) = 27 \text{ kips}$$

$$A_p = 27 \text{ kips} - 21 \text{ kips} = 6 \text{ kips}$$

⑤

$$6 \text{ kips} - 15 \text{ kips} + 21 \text{ kips} - 6 \text{ kips} - 6 \text{ kips}$$

$$27 \text{ kips} - 27 \text{ kips} = 0$$