

Mi Universidad

ESTÁTICA

FERNANDA STEPHANIA

RAMIREZ GUILLÉN

Parcial 1

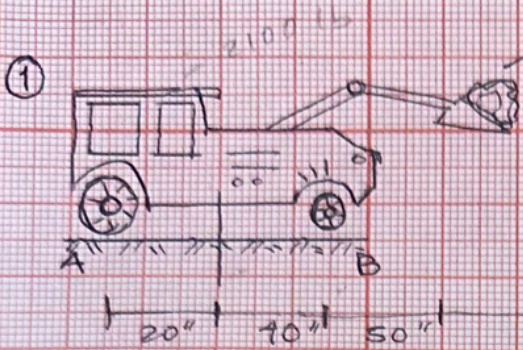
PEDRO ALBERTO GARCIA

LOPEZ

ESTÁTICA

Cuatrimestre 3°

26/05/2024

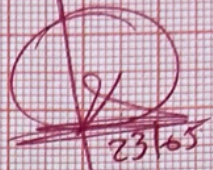


• Un tractor de 2100 libras se utiliza para levantar 900 libras de grava. Determina la relación entre la llanta trasera y delantera B.

Tractor = 2100 lb
Grava = 900 lb

$$\sum F_y = 0$$

$$\sum M = 0$$



$$\textcircled{1} \sum F_y = 0$$

$$(A_{pA}) + (-2100 \text{ lb}) + (-900 \text{ lb}) + (A_{pB}) = 0$$

$$A_{pA} = -3000 \text{ lb} + A_{pB}$$

$$A_{pA} + A_{pB} = 3000 \text{ lb}$$

$$\textcircled{2} \sum M = 0$$

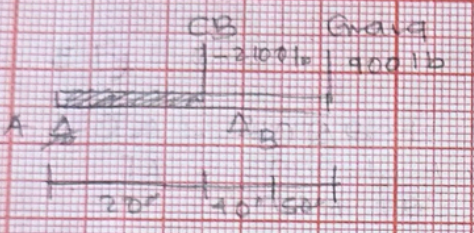
$$(-2100 \text{ lb} \cdot 20'') + (A_{pB} \cdot 60'') + (-900 \text{ lb} \cdot 100'')$$

$$(-42000 \text{ lb} \cdot \cancel{2}) + (B \cdot 60'') + (-90000 \text{ lb} \cdot \cancel{1})$$

$$(-111000 \text{ lb}) + (A_{pB} \cdot 60'')$$

$$A_{pB} = \frac{111000 \text{ lb}}{60''} = 1850 \text{ lb}$$

$$A_{pB} = \frac{11000 \text{ lb} \cdot 11}{60''} = \frac{2350 \text{ lb}}{2} = 1175 \text{ lb}$$



$$\textcircled{3} A_{pA} + A_{pB} = 3000 \text{ lb}$$

$$A_{pA} + (1175 \text{ lb}) = 3000 \text{ lb}$$

$$A_{pA} = 3000 - 1175 \text{ lb}$$

$$A_{pA} = 1825 \text{ lb}$$

$$A_{pA} = 1825 \text{ lb} / 2$$

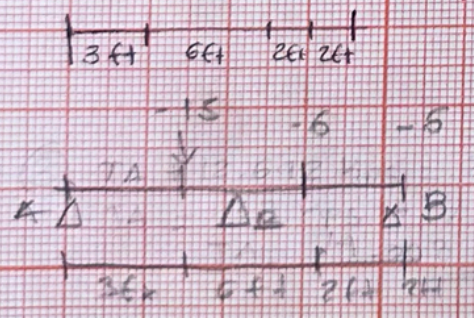
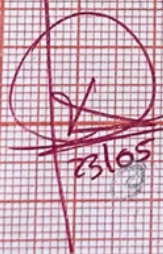
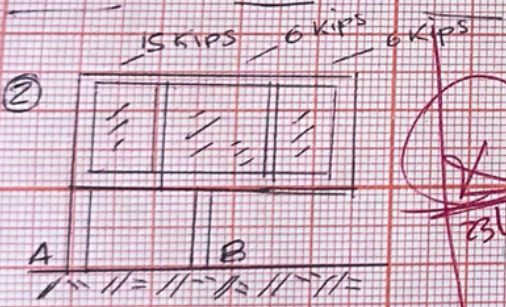
$$= 912.5 \text{ lb}$$

$$\sum F_y = 0$$

$$\textcircled{4} 912.5 \text{ lb} - 2100 + 2350 - 900 \text{ lb} = 0$$

$$\sum F_y = 0$$

$$3000 \text{ lb} - 300 \text{ lb} = 0$$



$$\sum F_y = 0$$

$$27 \text{ kips} - 15 \text{ kips} - 6 \text{ kips} - 6 \text{ kips} + 21 \text{ kips} = 0$$

$$27 \text{ kips} + 21 \text{ kips} = 0$$

$$A_{pA} = 27 \text{ kips}$$

$$\sum M = 0$$

$$(-15 \text{ kips} \cdot 3 \text{ ft}) + (6 \text{ kips} \cdot 9 \text{ ft}) + (6 \text{ kips} \cdot 11 \text{ ft}) + (A_{pB} \cdot 30 \text{ ft})$$

$$(-45 \text{ kips} \cdot \text{ft}) + (A_{pB} \cdot 30 \text{ ft}) + (-66 \text{ kips} \cdot \text{ft}) + (-78 \text{ kips} \cdot \text{ft})$$

$$(-189 \text{ kips} \cdot \text{ft}) + (A_{pB} \cdot 30 \text{ ft}) + (-144 \text{ kips} \cdot \text{ft}) + (-78 \text{ kips} \cdot \text{ft})$$

$$(189 \text{ kips} \cdot \text{ft}) + (A_{pB} \cdot 30 \text{ ft}) = 0$$

$$A_{pB} = \frac{189 \text{ kips} \cdot \text{ft}}{30 \text{ ft}} = 21 \text{ kips}$$

$$\textcircled{3} A_{pA} + A_{pB} = 27 \text{ kips}$$

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

$$A_{pA} = 27 \text{ kips} - 21 \text{ kips} = 6 \text{ kips}$$

$$\textcircled{4} \sum F_y = 0$$

$$6 \text{ kips} - 15 \text{ kips} + 21 \text{ kips} - 6 \text{ kips} - 6 \text{ kips} = 0$$

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