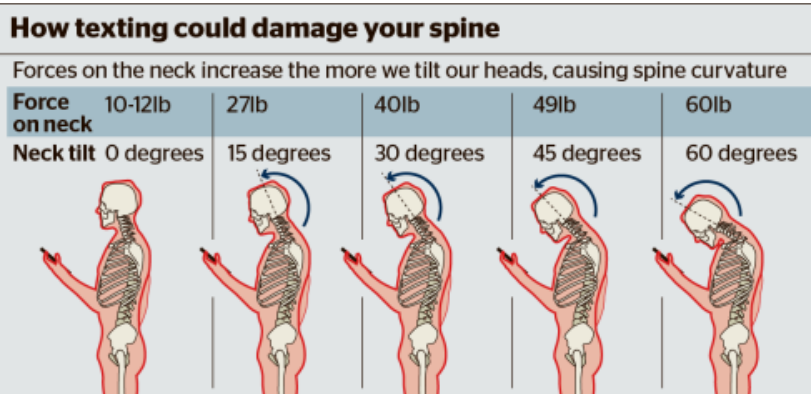
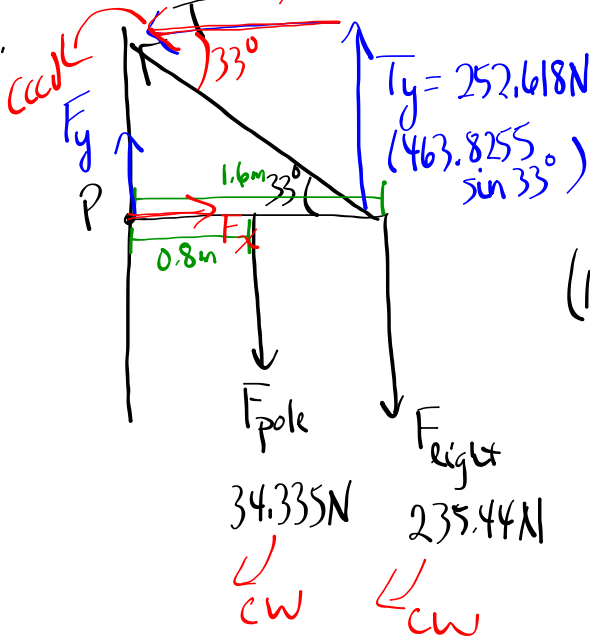


5 kg



PP/501

3.



$$(463.8255 \cdot \cos 33^\circ)$$

$$T_x = 388.997 \text{ N}$$

$$T_y = 252.618 \text{ N}$$

$$(463.8255 \cdot \sin 33^\circ)$$

$$\sum \tau_{ccw} = \sum \tau_{cw}$$

$$\sum \tau = \tau_{pole} + \tau_{light}$$

$$(1.6\text{m})T(\sin 33^\circ) = (0.8\text{m})(34.335\text{N})$$

$$+ (1.6\text{m})(235.44\text{N})$$

$$(1.6\text{m})T(\sin 33^\circ) = 27.484 \text{ N}\cdot\text{m} + 376.704 \text{ N}\cdot\text{m}$$

$$(1.6\text{m})T(\sin 33^\circ) = 404.188 \text{ N}\cdot\text{m}$$

Horizontally

$$F_x = T_x$$

$$F_x = 388.997 \text{ N}$$

$$T = \frac{404.188 \text{ N}\cdot\text{m}}{(1.6\text{m})(\sin 33^\circ)}$$

$$T = 463.826 \text{ N} \quad (4.6 \times 10^2 \text{ N})$$

Vertically

$$T_y + F_y = F_{light} + F_{pole}$$

$$F_y = F_{light} + F_{pole} - T_y$$

$$F_y = 34.335 \text{ N} + 235.44 \text{ N} - 252.6175 \text{ N}$$

$$F_y = 17.1575$$



A Bridge Problem

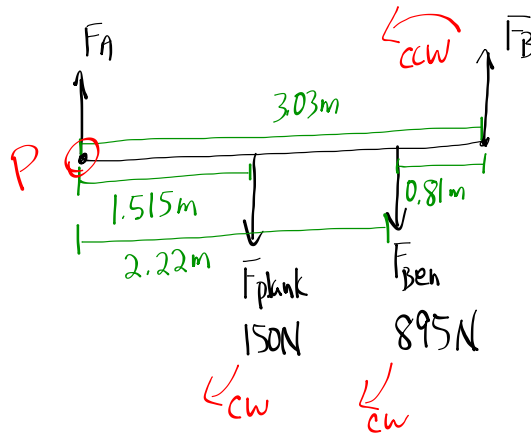
$$F_{\text{ben}} = 895\text{N}$$

$$F_{\text{plank}} = 75\text{N} + 75\text{N} = 150\text{N}$$

$$F_A = ?$$

$$F_B = ?$$

Choose
end A as
the pivot



$$\sum \tau_{\text{ccw}} = \sum \tau_{\text{cw}}$$

$$\tau_B = \tau_{\text{plank}} + \tau_{\text{ben}}$$

$$(3.03\text{m})F_B = (1.515\text{m})(150\text{N}) + (2.22\text{m})(895\text{N})$$

$$(3.03\text{m})F_B = 227.25\text{N}\cdot\text{m} + 1969\text{N}\cdot\text{m}$$

$$F_B = \frac{2196.25\text{N}\cdot\text{m}}{3.03\text{m}}$$

$$F_B = 725\text{N}$$

755N

Vertically

$$F_A + F_B = F_{\text{plank}} + F_{\text{ben}}$$

$$F_A = F_{\text{plank}} + F_{\text{ben}} - F_B$$

$$F_A = 150\text{N} + 895\text{N} - 725\text{N}$$

$$F_A = 320\text{N}$$

310N