



A pole stands initially at equilibrium. After a while, two men begin to pull on ropes attached to the pole as seen above. If forces of F and P are exerted on the ropes, find the magnitudes of the moments of each force about A and their rotation direction. Will the pole rotate clockwise, counterclockwise, or remain upright (Assuming that the pole can pivot about A)?

Find the moments about A .

$$|M_{AF}| = h_1 \frac{4}{5} F$$

→ Clockwise

$$|M_{AP}| = (h_1 + h_2) P \cos(\theta)$$

→ Counterclockwise

Will the pole rotate clockwise, counterclockwise, or remain upright?

If $|M_{AF}| > |M_{AP}|$, clockwise

If $|M_{AF}| < |M_{AP}|$, counterclockwise

If $|M_{AF}| = |M_{AP}|$, no rotation