

How-To for Static Equilibrium

Step 0: Force diagram

Step 1: Pick pivot point

can be any point, but single one for given problem

Hint: Eliminate an unknown force by picking P where it acts!

$$\tau_{P \text{ force at } P} = 0 \text{ b.c. } \vec{F} = 0!$$

Step 2: Choose + dir for torque

Step 3: Draw sense of rotation for each force wrt P

Step 4: Condition 1

$$\sum \vec{F}_{\text{ext}} = 0$$

Step 5: a. Write magnitudes (& signs) of torques due to each force (about P)

b. Condition 2

$$\sum \vec{\tau}_P = 0$$

Step 5½: Add in other info if needed/available (e.g. friction)

Step 6: Solve for unknowns, assuming at least n equations for n unknowns