

Announcements

- Do NOT discuss quiz material with anyone until after the end of the testing period (Sunday)

☐ Upcoming deadlines:

- Today! (9/14)
 - Written Assignment
- Tuesday (9/18)
 - PL HW
- Friday (9/21)
 - Written Assignment

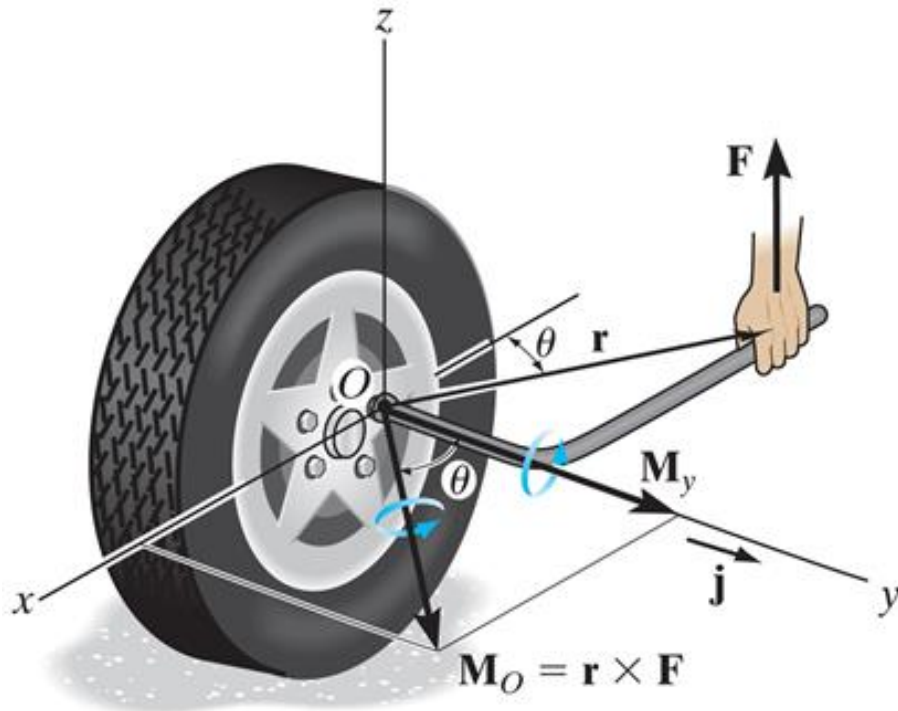


Objective

- Moment of a force about a specific axis
- Couple Moment

Moment about a Specific Axis

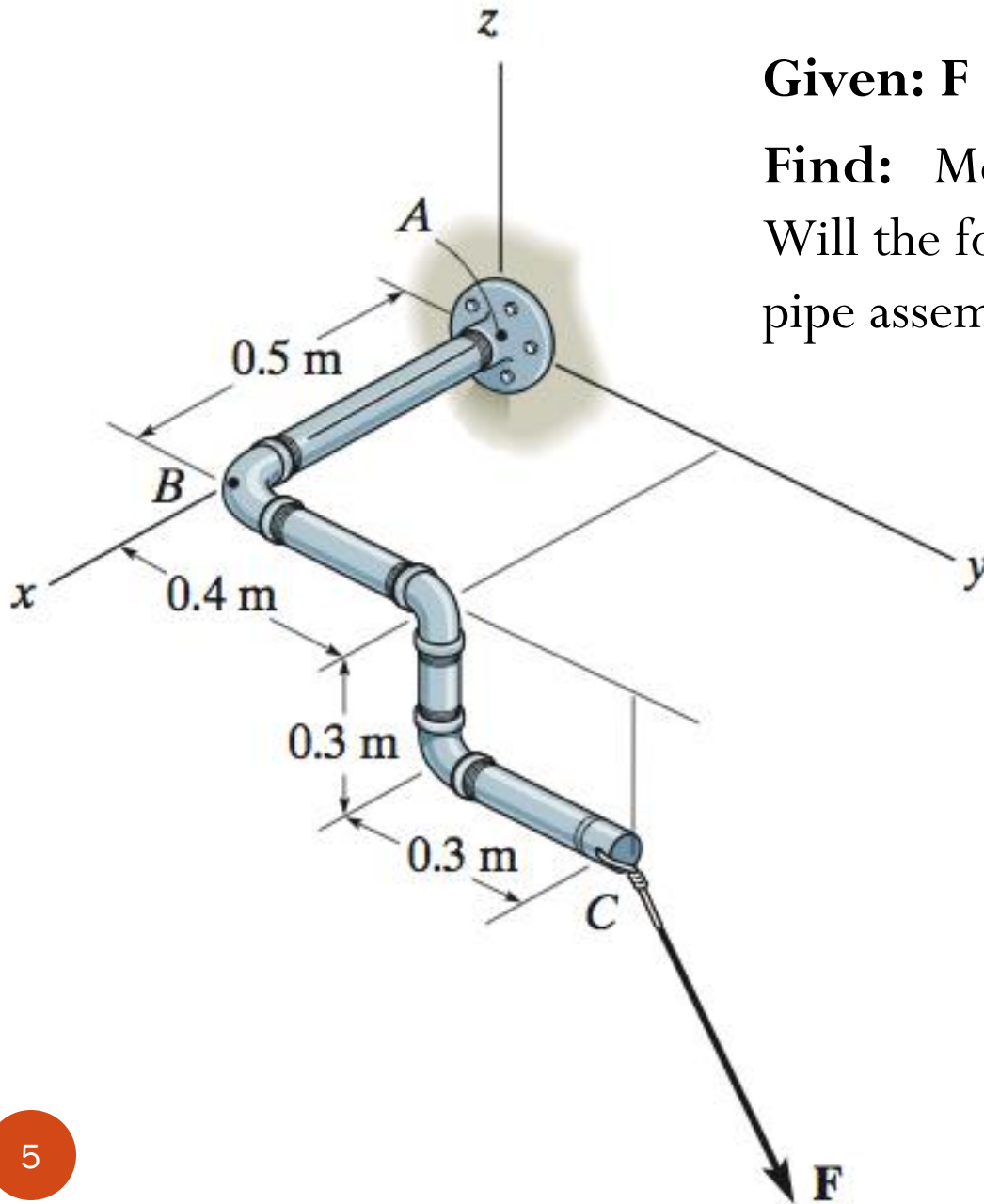
Remember, the component of a vector, \mathbf{A} , along the direction of another, \mathbf{B} , can be determined using the dot product:



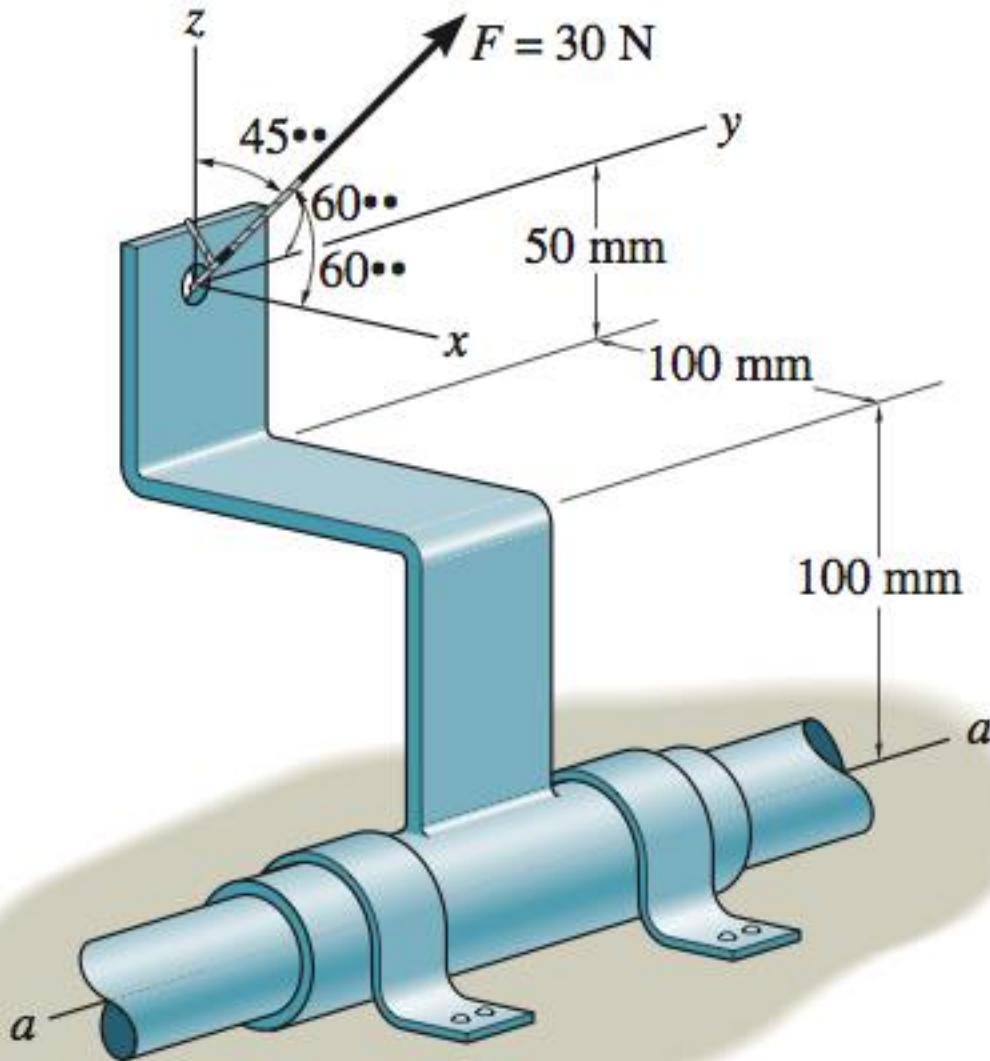
Example – Vector Formulation

Given: $\mathbf{F} = \{600\mathbf{i} + 800\mathbf{j} - 500\mathbf{k}\}$ N

Find: Moment of the force about the x -axis.
Will the force be tightening or loosening the pipe assembly at A ?



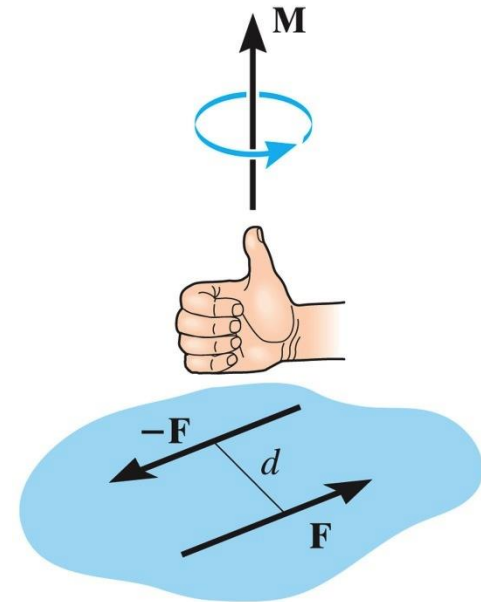
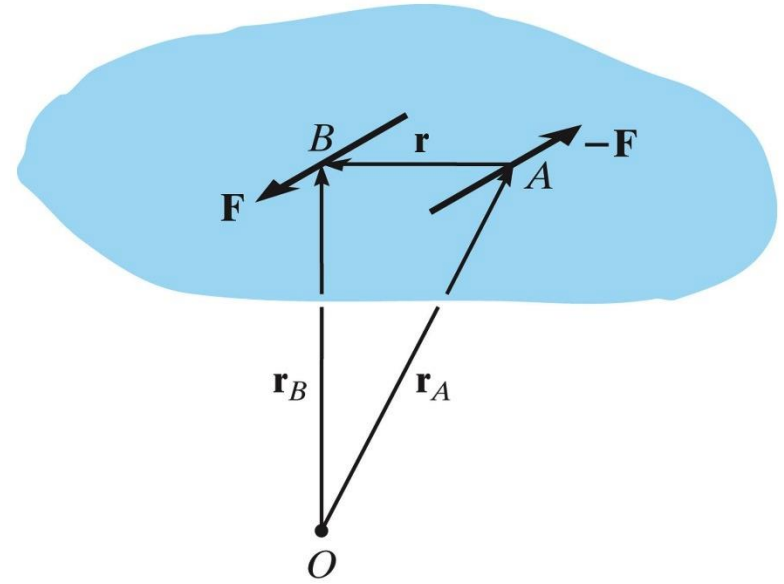
Example – Vector Formulation



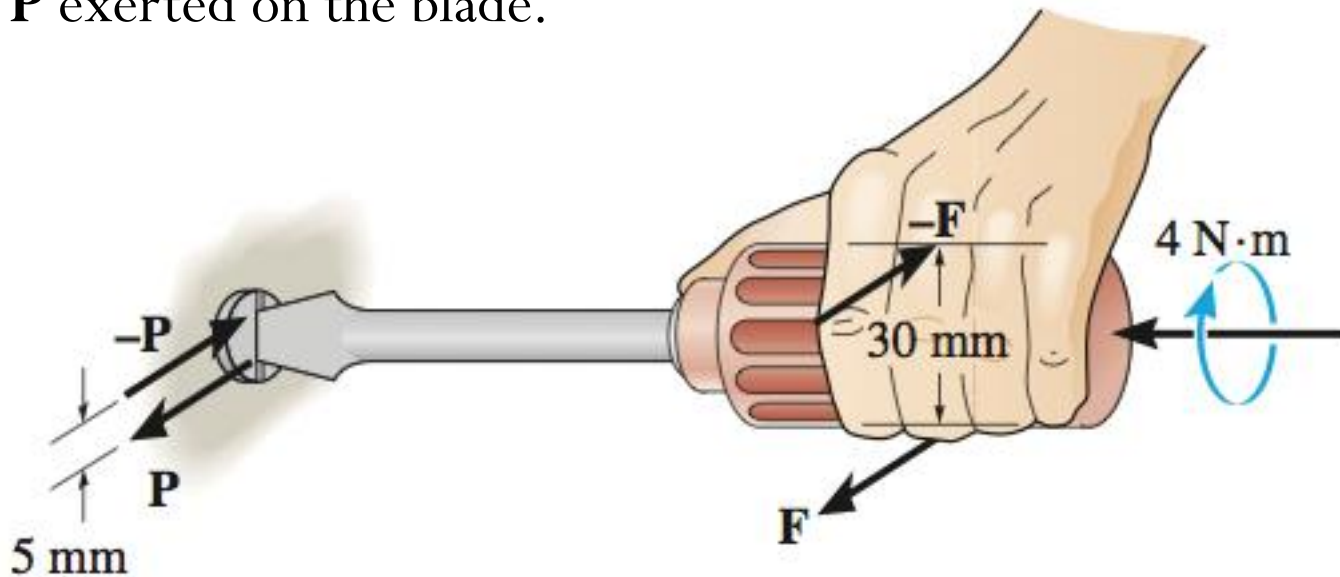
Determine the moment of the force about the a - a axis of the pipe. ($\alpha = 60^\circ$, $\beta = 60^\circ$, and $\gamma = 45^\circ$)

Couple Moment

Moment of a couple



A twist of $4 \text{ N}\cdot\text{m}$ is applied to the handle of the screwdriver. Resolve this couple moment into a pair of couple forces \mathbf{F} exerted on the handle and \mathbf{P} exerted on the blade.



Find the moment of the couple acting on the pipe in Cartesian vector form. What is the magnitude of the couple moment? Take $F = 125$ N.

