
Week 5



TAM 210/211 Introduction of Statics

DISCUSSION SESSION



Early Informal Feedback (EIF)

- To improve the class based on your feedback
- Scan the QR code to access the survey
- Please answer honestly :)



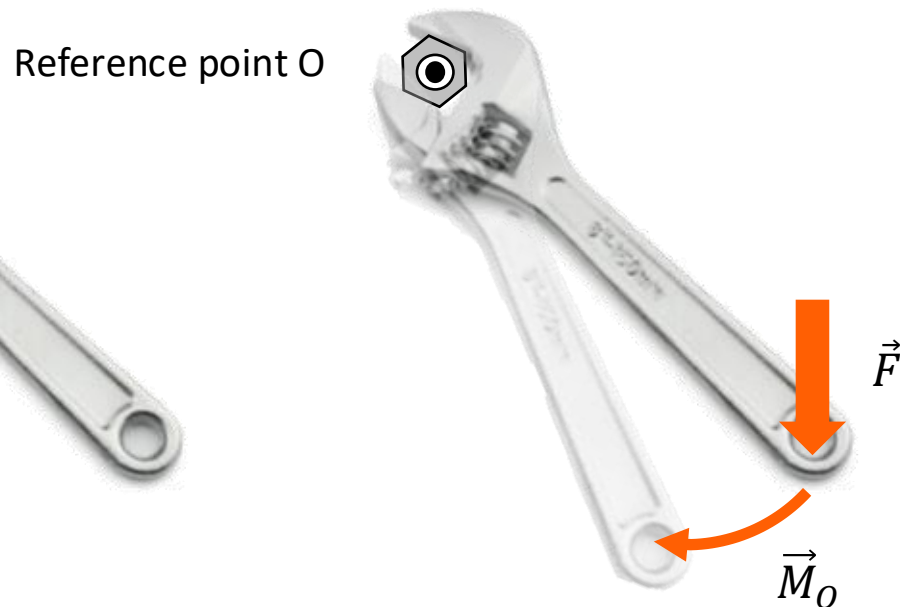
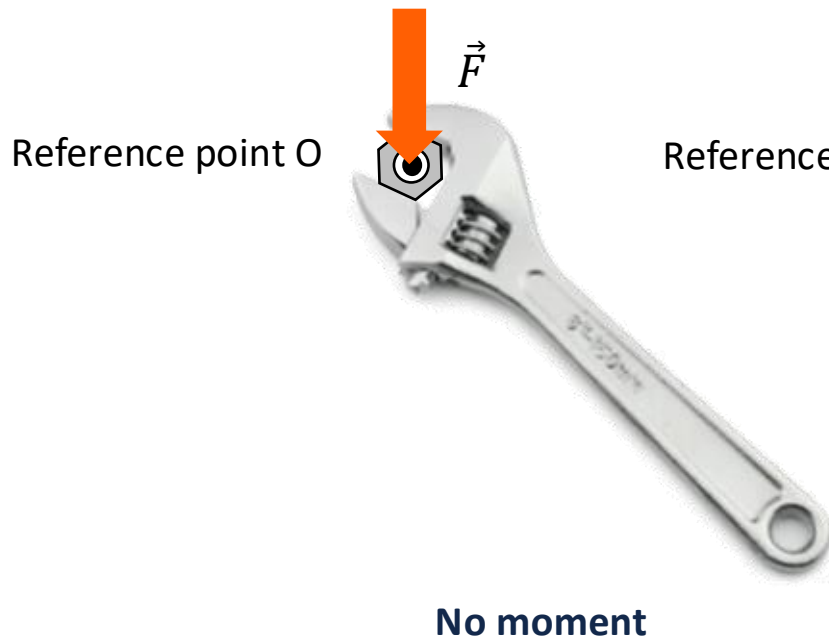
00:05:00

A large digital clock display with a black border and a light green background. The clock shows the time 00:05:00 in a bold, black, digital font. The digits are arranged in two rows: the top row shows '00:05' and the bottom row shows ':00'. The clock is centered on the slide.

WEEK 5 – Moments

- **Moment**

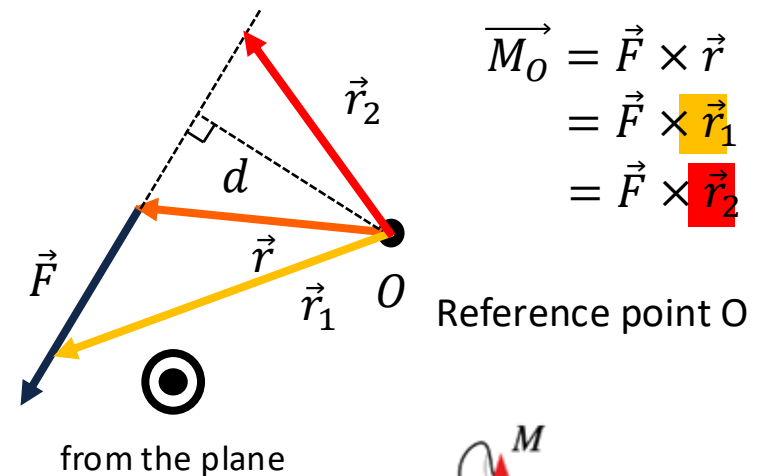
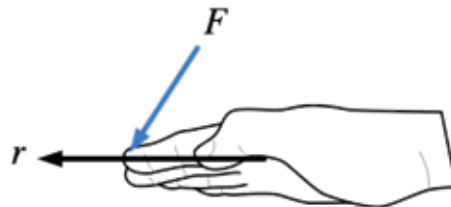
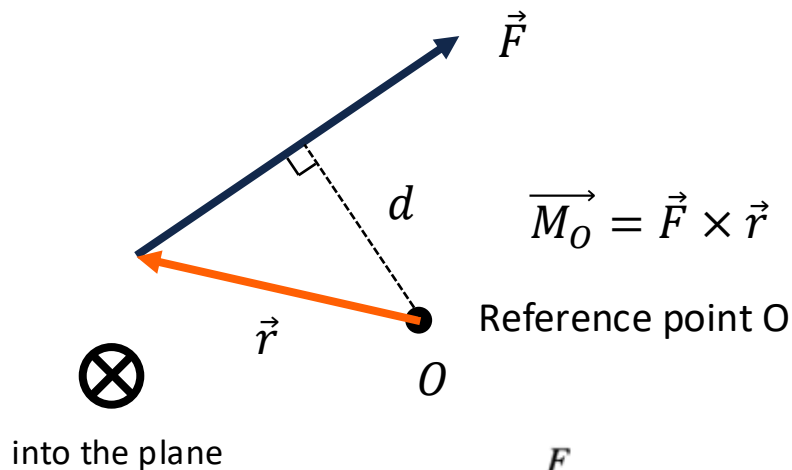
- A physical quantity that causes an object to rotate (vector)
- Often called torque
- Magnitude: force magnitude (F) x distance from the reference point to the force (d), $M = F \cdot d$
- Direction: determined by the right-hand rule
- In vector form, $\vec{M}_O = \vec{r} \times \vec{F}$ (the order matters)



WEEK 5 – Moments

- **Moment**

- A physical quantity that causes an object to rotate (vector)
- Often called torque
- Magnitude: force magnitude (F) x distance from the reference point to the force (d), $M = F \cdot d$
- Direction: determined by the right-hand rule
- In vector form, $\vec{M}_O = \vec{r} \times \vec{F}$ (the order matters)



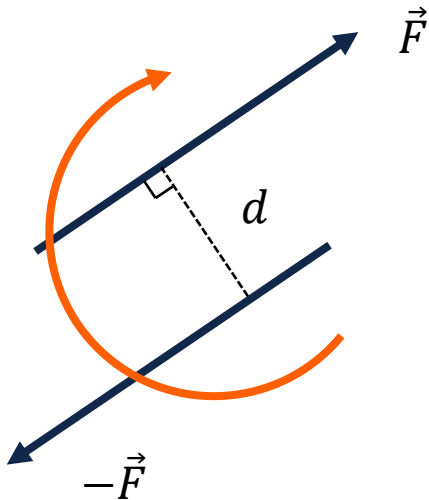
$$\begin{aligned}\vec{M}_O &= \vec{F} \times \vec{r} \\ &= \vec{F} \times \vec{r}_1 \\ &= \vec{F} \times \vec{r}_2\end{aligned}$$



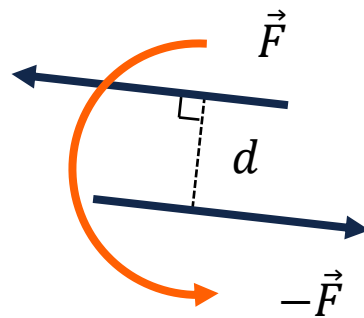
WEEK 5 – Moments

- **Couple moment**

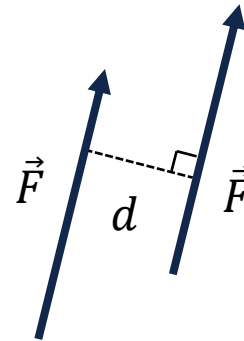
- A system of forces that produces a **net moment** but **no net force** (vector)
- Two parallel forces, equal in magnitude and opposite in direction, act along different lines of action
- Also called force couple or pure moment
- Independent of the point of application
- Magnitude: magnitude of one force (F) x distance between two forces (d), $M = F \cdot d$
- Direction: see below



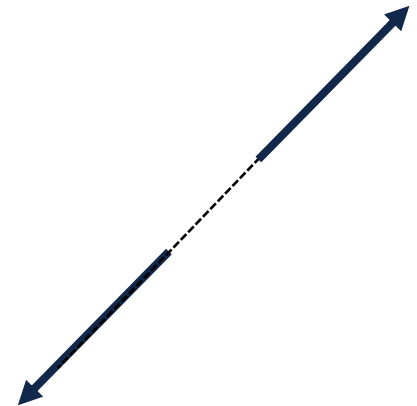
couple moment (O)



couple moment (O)



couple moment (X)



couple moment (X)

WEEK 5 – Moments

- **Additional instructions for Problem #3**

- The distances given on the worksheet represent the perpendicular distance from the reference point O to the force vector's line of action

