Announcements

- Quiz 3 retry this week

- Upcoming deadlines:
- Friday (3/1)
  - Written Assignment
- Tuesday (3/5)
  - PL HW

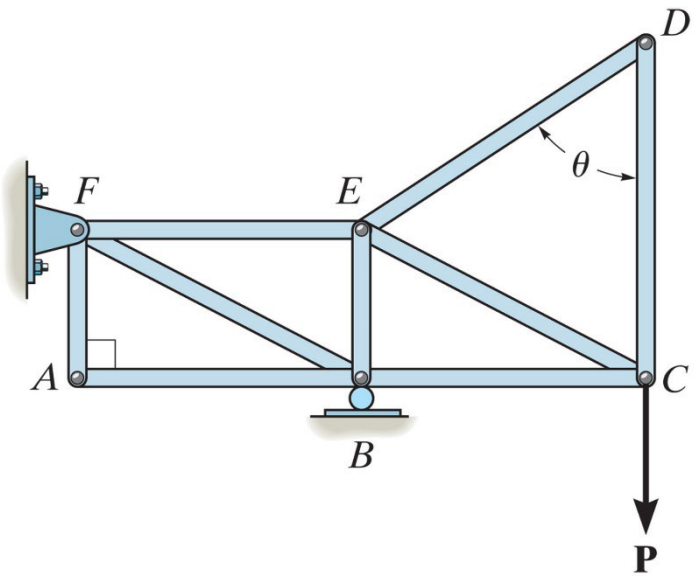
Objectives

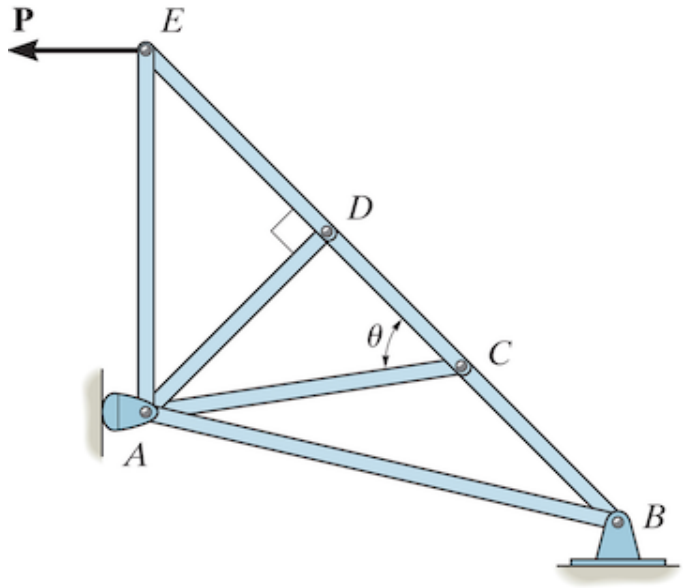
- Truss Analysis
  - Zero-force member
  - Method of section

Zero-force members (ZFM)

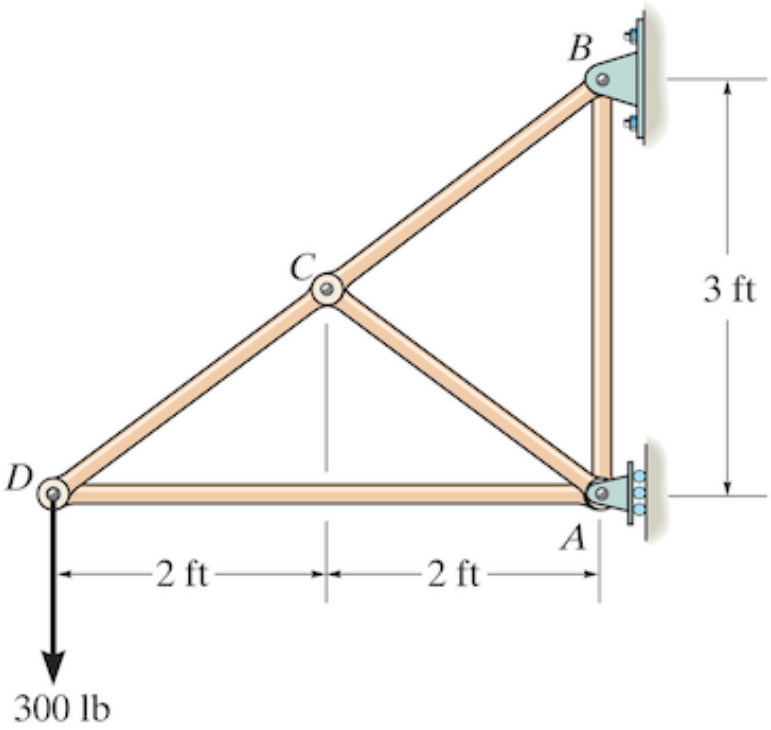
- Particular members in a structure may experience no force for certain loads.
- Zero-force members are used to increase stability.
- Identifying members with zero-force can expedite analysis.
- Requirement: No external force/support reaction on the pin for analysis.
- Two cases (use pin analysis):

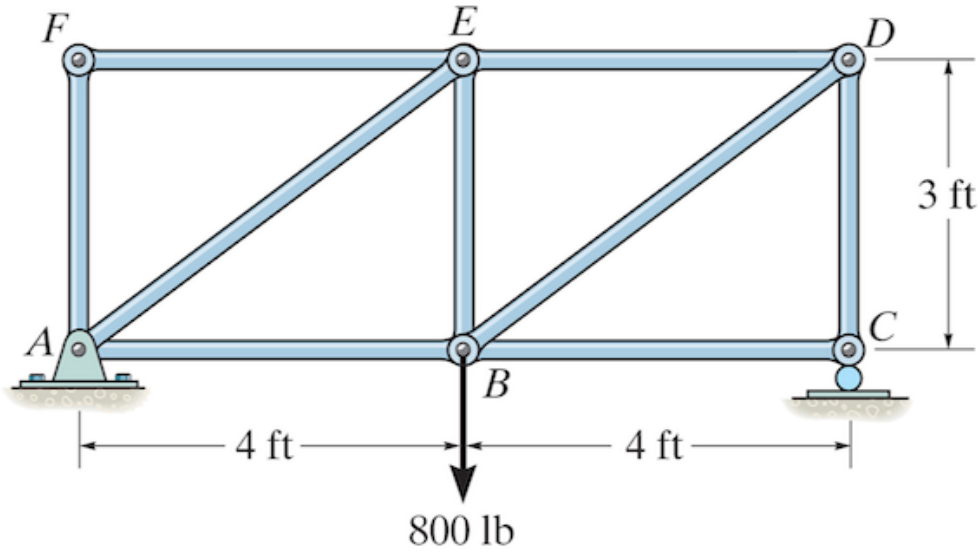
1. Two non-collinear members.
2. Two collinear members + a third non-collinear member.



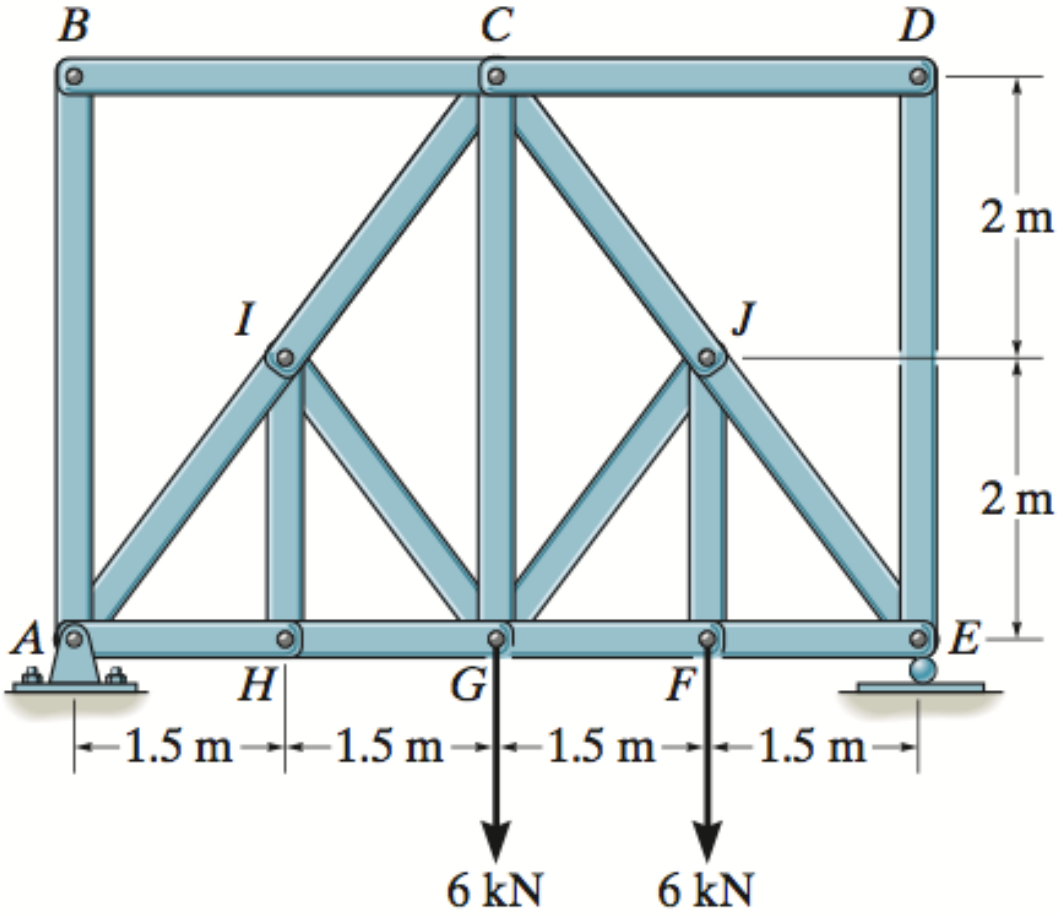


Which are zero-force members?





How many zero-force members are in the truss?

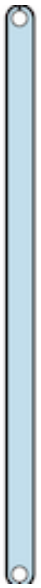


Internal forces

- How are two-force members being held together internally?

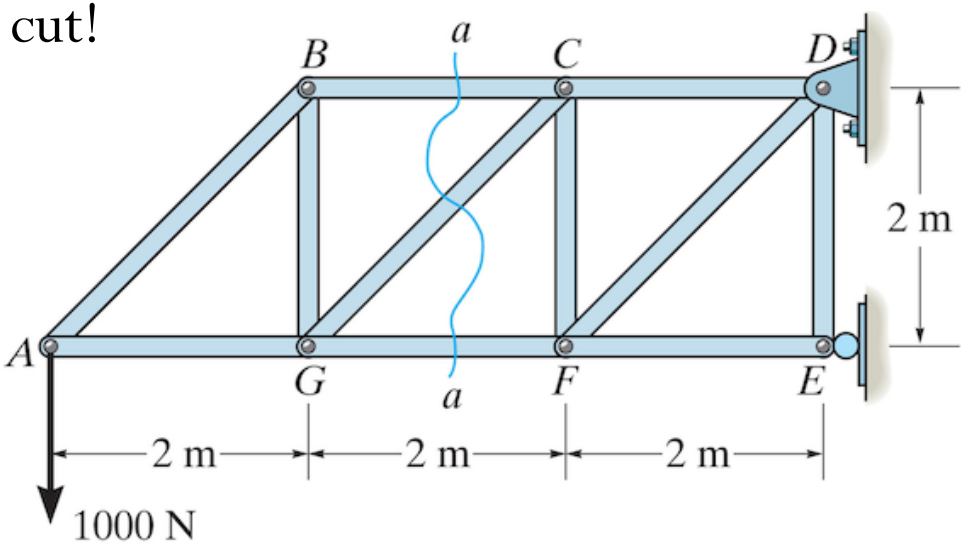
Tension

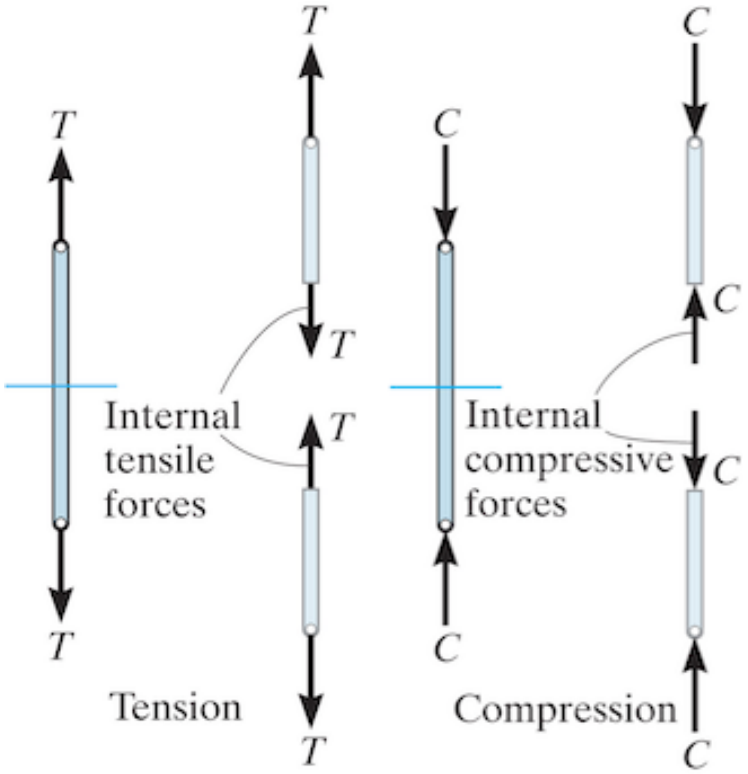
Compression



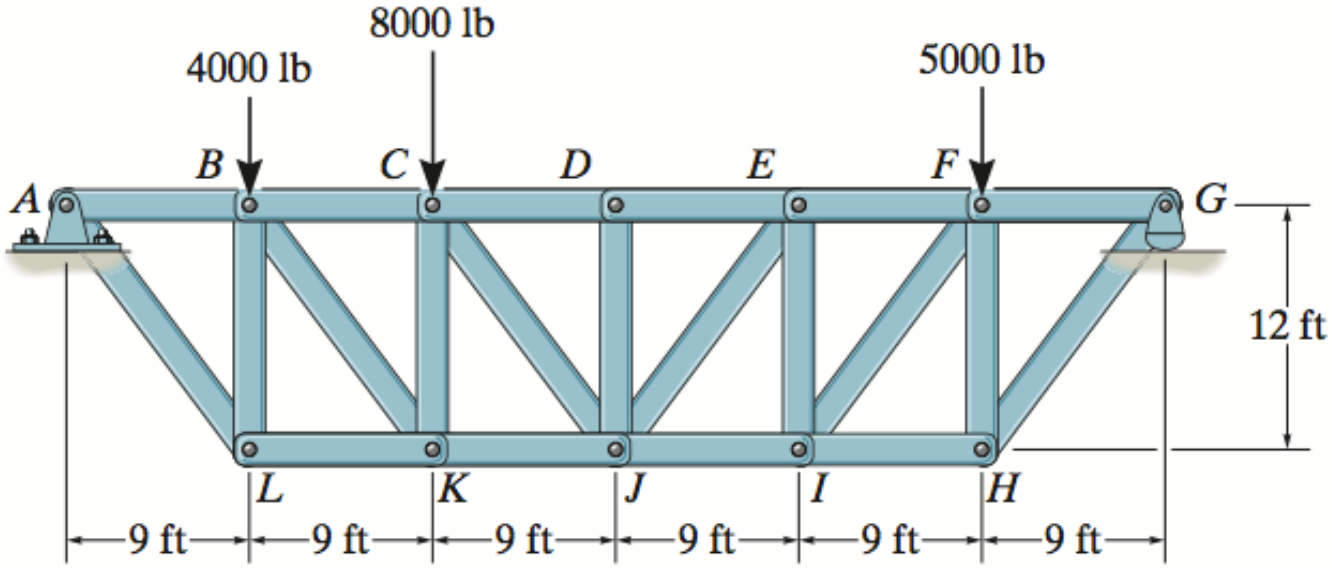
Method of sections

- Determine external support reactions
- "Cut" the structure at a section of interest into two separate pieces and set either part into force and moment equilibrium
- Be aware of number of unknowns after your cut!





Determine the force in members *EI* and *JI* of the truss which serves to support the deck of a bridge. State if these members are in tension or compression.



Determine the force in members *BF*, *BG*, and *AB*, and state if the members are in tension or compression.