Introduction to trusses
Truss Structures

- ancient (?) wood
  - Romans 500 B.C.
- Renaissance revival
- 1800’s analysis
- efficient
Truss Structures

• comprised of straight members
• geometry with triangles is stable
• loads applied only at pin joints
Truss Structures

- **2 force members**
  - compression
  - tension

- **3 members connected by 3 joints**

- **2 more members need 1 more joint**

\[ b = 2n - 3 \]
Truss Structures

- statically determinate
- indeterminate
- unstable
Truss Analysis

- visualize compression and tension from deformed shape
Truss Analysis

- Method of Joints
- Graphical Methods
- Method of Sections

- all rely on equilibrium
  - of bodies
  - internal equilibrium
Method of Joints

- isolate each joint
- enforce equilibrium in $F_x$ and $F_y$
- can find all forces
- long
- easy to mess up
Joint Cases

- two bodies connected

A \rightarrow B \rightarrow C or A \rightarrow B \rightarrow C

equal

equal and 0
Joint Cases

• three bodies with two in line
Joint Cases

• *crossed*