ENSC 2113
Engineering Mechanics: Statics

Lecture 23
Section 6.6

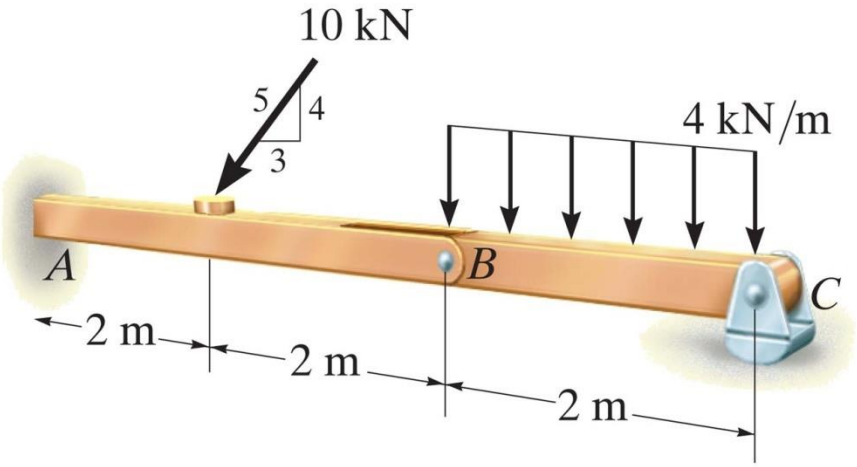
College of Engineering, Architecture & Technology

6.6: Frames and Machines

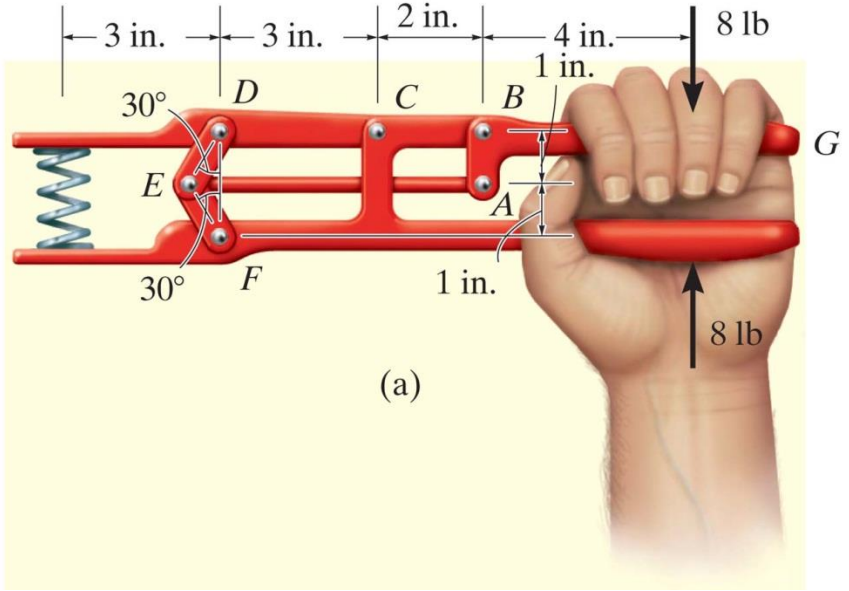
Frames and ***Machines*** are composed of pin-connected, multi-force members.

Frames are typically stationary

Machines typically contain moving parts and transmit or alter the effects of forces and moments



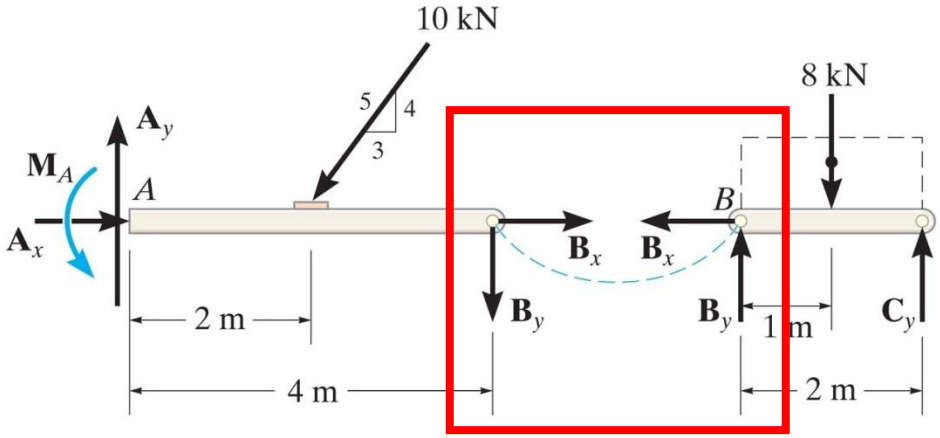
Frame



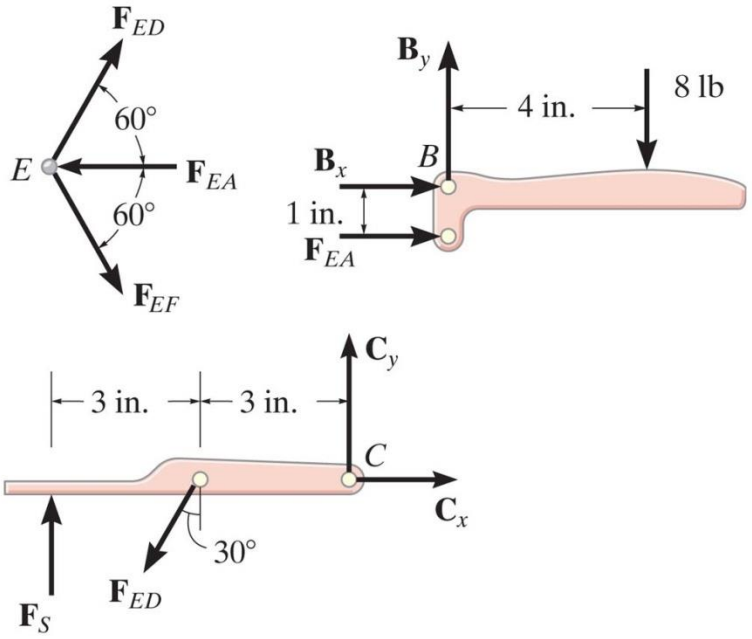
Machine

For a coplanar system we have 3 equilibrium eqns to use.

For ***Frames*** & ***Machines***, this often requires that we break the system into individual members

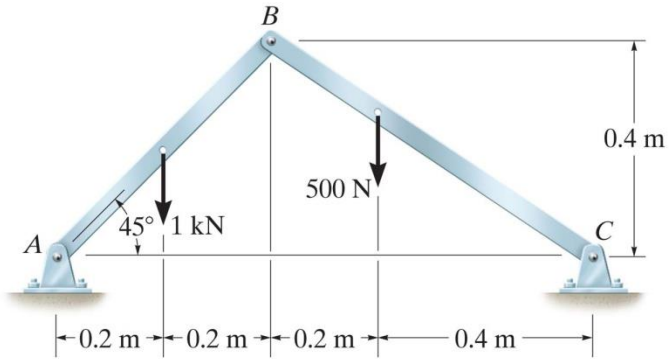


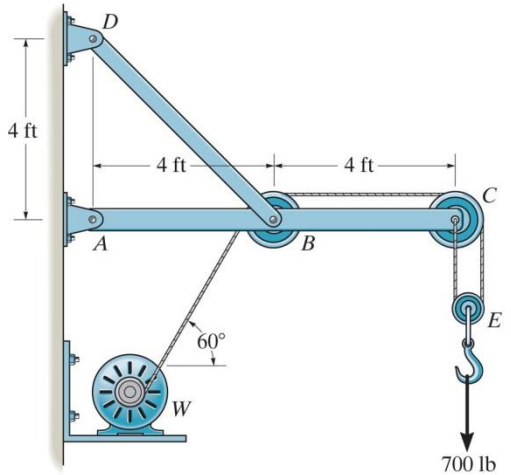
Internal forces at joints become equal magnitude acting in opposite directions



Procedures for Analysis:

1) Isolate each part of the frame or machine:
   - Draw outline shape
   - Show all applied forces & moments (known, unknown)
   - Label all applied forces & moments (known, unknown)
   - Label dimensions
2) Identify all 2-force members.
3) Forces at connecting joints between mbrs will have equal & opposite forces applied to each mbr of the joint.
4) Apply equilibrium eqns to solve for unknowns.





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