Housekeeping

- Sunday
  - WA 7
- Tuesday
  - PL HW 14
  - Quiz 4
- Thursday
  - ME HW 15
Engineering...

is the application of mathematics in order to design, build, and improve stuff....and is awesome!

is (according to wikipedia) the application of mathematics, empirical evidence and scientific, economic, social, and practical knowledge in order to invent, innovate, design, build, maintain, research, and improve structures, machines, tools, systems, components, materials, processes and organizations.
Frames and machines

Frames and machines are two common types of structures that have at least one multi-force member (Recall that trusses have nothing but two-force members).

Frames are generally stationary and used to support various external loads.
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Machines contain moving parts and are designed to alter the effect of forces.
Frames and machines

The members can be truss elements, beams, pulleys, cables, and other components. The general solution method is the same:
Draw the FBD of the members of the backhoe. The bucket and its contents have a weight $W$. 
Given: The frame supports an external load and moment as shown.

Find: The horizontal and vertical components of the pin reactions at C and the magnitude of reaction at B.
**Given:** The wall crane supports an external load of 700 lb.

**Find:** The force in the cable at winch motor W and the horizontal and vertical components of pin reactions at A, B, C, and D.