

## The method of sections

The method of joints always applies, as does another method: the method of sections. It follows from the idea that, for a static body, every section of that body is also static! That is, considering a section of a body, external and internal forces must be in equilibrium -- otherwise, the section would move! Consider the following members in tension and compression.



If we were to “slice” or “section” each of these beams, down the middle, the following sections would result.



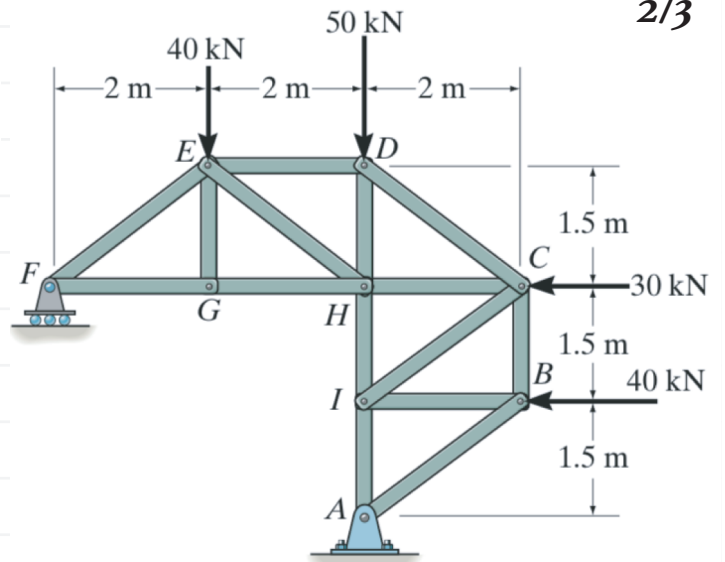
This lets us “slice up” or “section out” portions of a truss.

So what? In some circumstances, we desire to know only certain member forces. We might try the method of joints, working from those joints that yield solutions to all unknowns to those that are we want to know, but this can be a long process for large trusses. In these cases, it is preferable to use the method of sections:

*Slice the truss through members the forces through which we would like to know, leaving a section that has at most three unknown forces or moments (including those we want to know). Apply the equilibrium conditions (three equations in 2D) to this section.*

**Hibbeler (2015) Problem 6-28**

\*6-28. Determine the force in members  $ED$ ,  $EH$ , and  $GH$  of the truss, and state if the members are in tension or compression.



**Hibbeler (2015) Problem 6-49**

6-49. Determine the force in members  $HI$ ,  $FI$ , and  $EF$  of the truss, and state if the members are in tension or compression.

