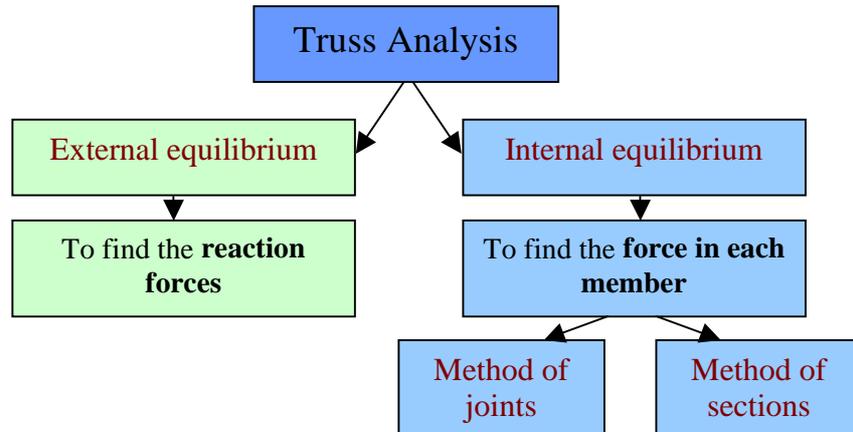


## Simple trusses: Part 5

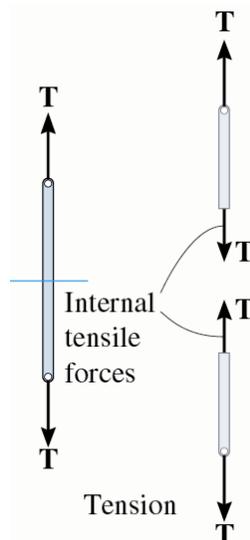
### Analysis of trusses (Internal equilibrium):

There are two types of analysis:

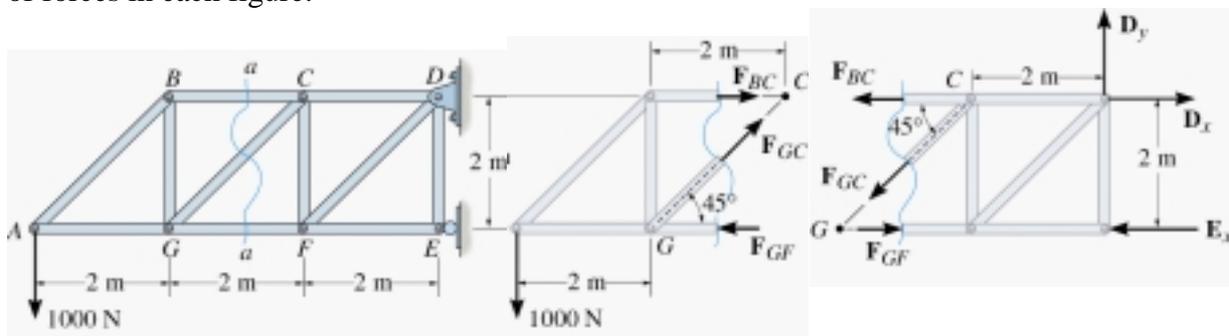


### Internal equilibrium (Method of sections):

Based on principle that if a body is in equilibrium then any (all) parts of the body must be in equilibrium.

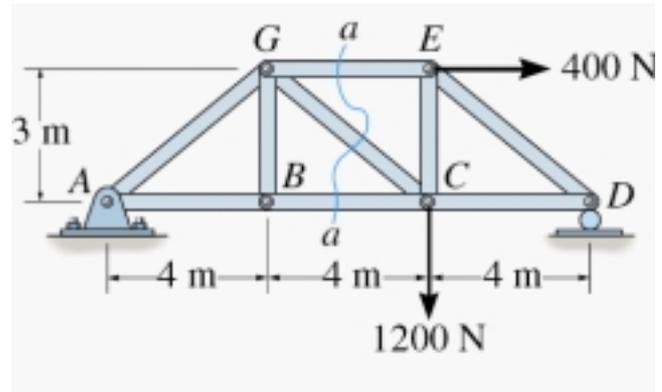


The following figures show how the forces replace the sectioned members. Notice the direction of forces in each figure.



**Example:**

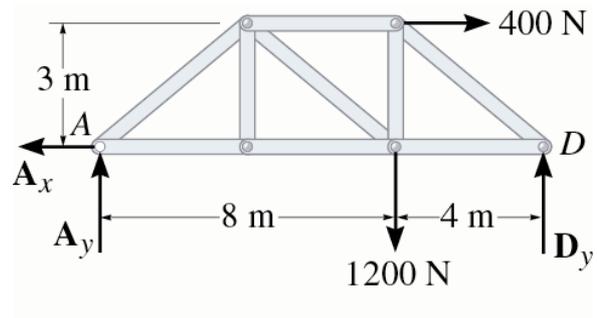
Find the forces in members GE, GC, BC.



Solution:

We first draw the FBD and solve for the supporting reactions:

$$\begin{aligned}\sum F_x &= 0 \\ 400 - A_x &= 0 & \sum F_y &= 0 \\ A_x &= 400 \text{ N} & A_y + D_y - 1200 &= 0 \\ \sum M_A &= 0 \\ -1200(8) - 400(3) + D_y(12) &= 0 \\ D_y &= 900 \text{ N} \\ A_y &= 300 \text{ N}\end{aligned}$$



We then choose the a-a section:

$$\begin{aligned}\sum M_G &= 0 \\ -300(4) - 400(3) + F_{BC}(3) &= 0 \\ F_{BC} &= 800 \text{ N (T)}\end{aligned}$$

$$\begin{aligned}\sum M_C &= 0 \\ -300(8) - F_{GE}(3) &= 0 \\ F_{GE} &= -800 \text{ N} \\ F_{GE} &= 800 \text{ N (C)}\end{aligned}$$

$$\begin{aligned}\sum F_y &= 0 \\ -300 - F_{GC}\left(\frac{3}{5}\right) &= 0 \\ F_{GC} &= 500 \text{ N (T)}\end{aligned}$$

