



Announcements

- Discussion group – 8% of grade!
- Check your grades on compass (--- ≠ 0)
- Sign up for Quiz 4 (CBTF next week)

Mastering Engin. (Not 10)

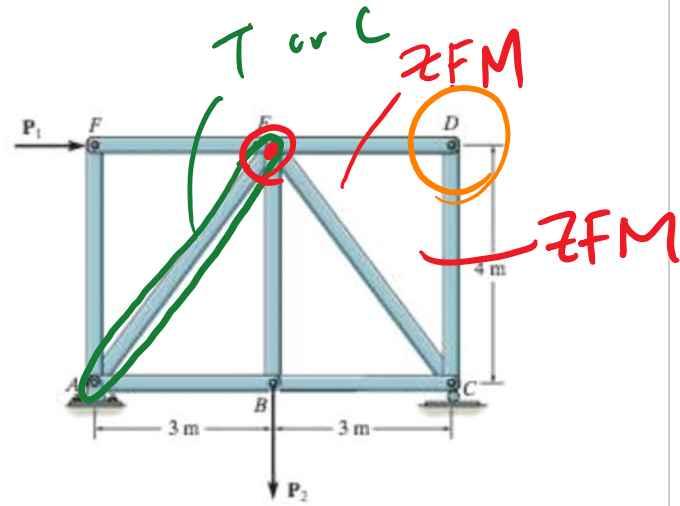
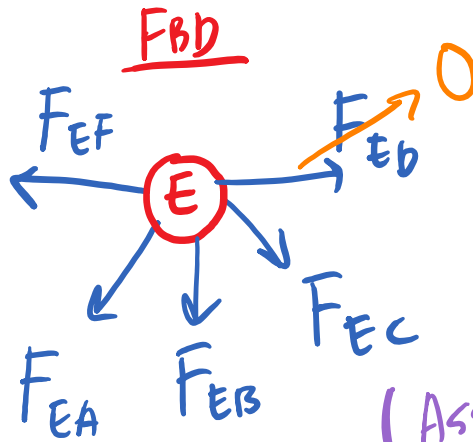
□ Upcoming deadlines:

- Tuesday (10/10)
 - PL HW12
- Thursday (10/12)
 - ME HW13
- Friday (10/13)
 - WA #2 (check website)



Recap

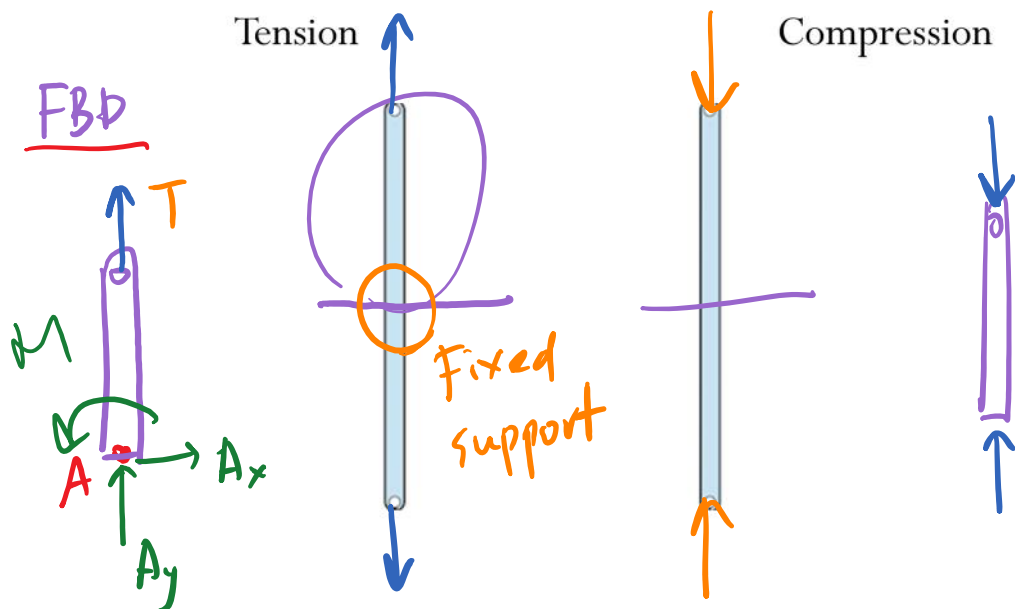
- Truss Analysis – Joint/pin method



(Assume tension, or "pulling", and let the math determine the correct direction)

Internal forces

- How are two-force members being held together internally?



3

$$\sum F_x = 0 = A_x$$

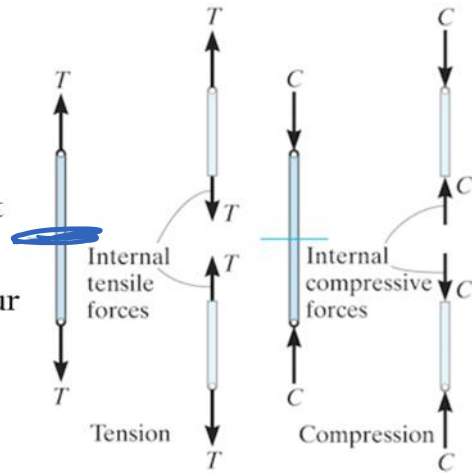
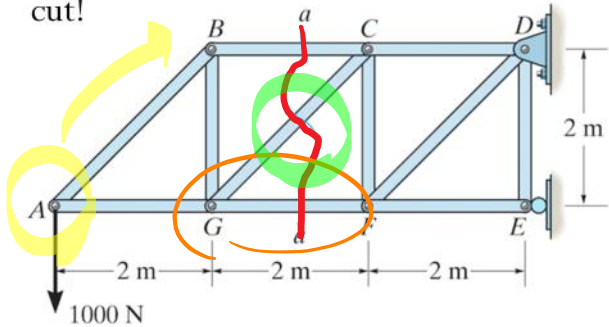
$$\sum F_y = 0 = F_y + T$$

$$\sum M_a = 0 = M$$

$$F_y = -T$$

Method of sections

- Determine external support reactions
- "Cut" the structure at a section of interest into two separate pieces and set either part into force and moment equilibrium
- Be aware of number of unknowns after your cut!

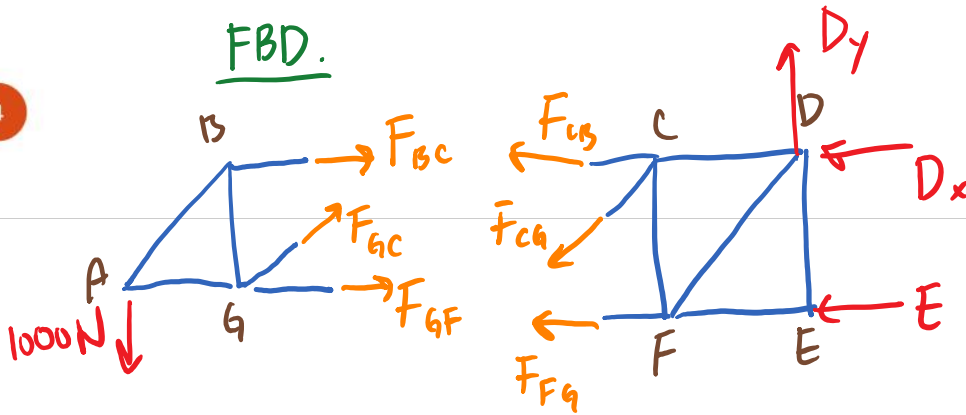


Note:

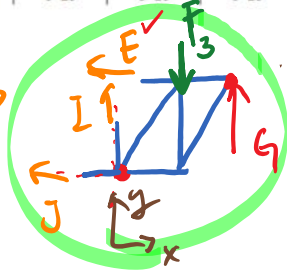
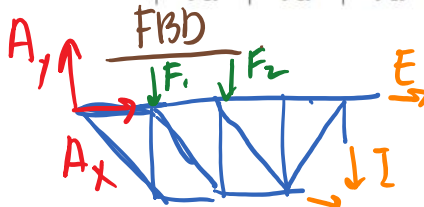
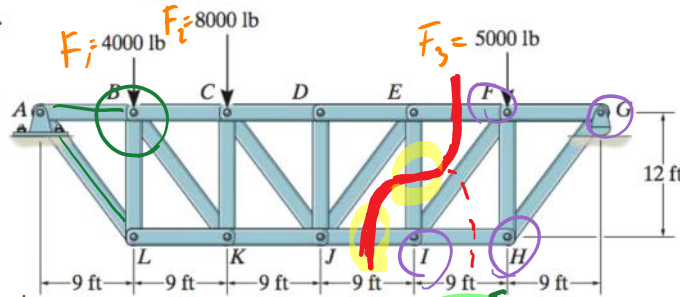
- Make the cut in the middle of the member
- Advantage = analyze members in the middle of a truss

FBD.

4



Determine the force in members EI and JI of the truss which serves to support the deck of a bridge. State if these members are in tension or compression.



$$\sum F_x = -E - J = 0 \Rightarrow J = 7500 \text{ lb (T)}$$

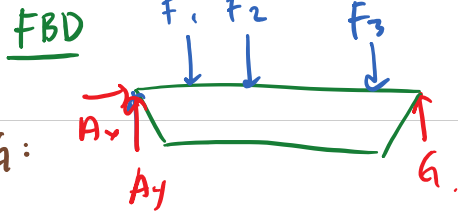
$$\sum F_y = G + I - F_3 = 0 \Rightarrow I = 2500 \text{ lb (C)}$$

$$\sum M_I = E(12 \text{ ft}) + G(18 \text{ ft}) - F_3(9 \text{ ft}) = 0$$

$$\sum F_y = A_y + G_y + \dots \text{ (2 unknowns)}$$

7

Solve for reaction at G:



$$\sum M_A = +G(54 \text{ ft}) - F_1(9 \text{ ft}) - F_2(18 \text{ ft}) - F_3(45 \text{ ft}) = 0$$

better option

- A) I B) F C) H ~~D) G~~
 unk: E

unknown: I, J $\Rightarrow G = 7500 \text{ lb}$