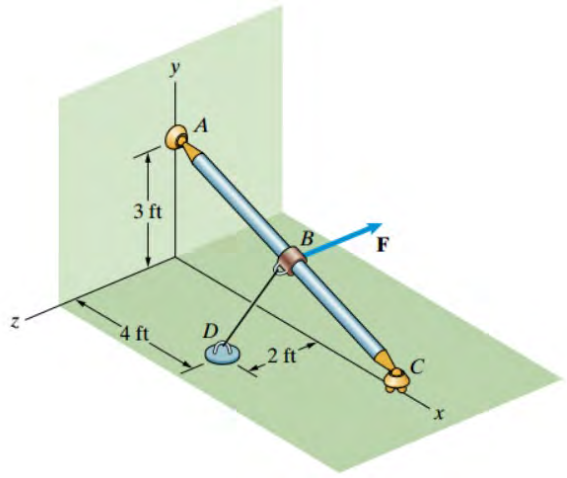
GEN_ENG 205-2: Engineering Analysis II Points – 90

Homework #6

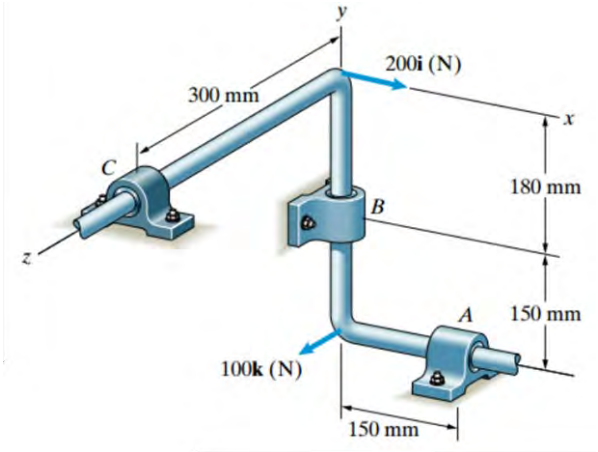
Problem 1 (5.99)

The 8 ft bar is supported by a ball and socket at A, the cable BD, and a roller support at C. The force $\mathbf{F} = -50\mathbf{k}$ (lb). The collar at B is fixed to the bar at its midpoint. Determine the tension in cable BD and the reactions at A and C.



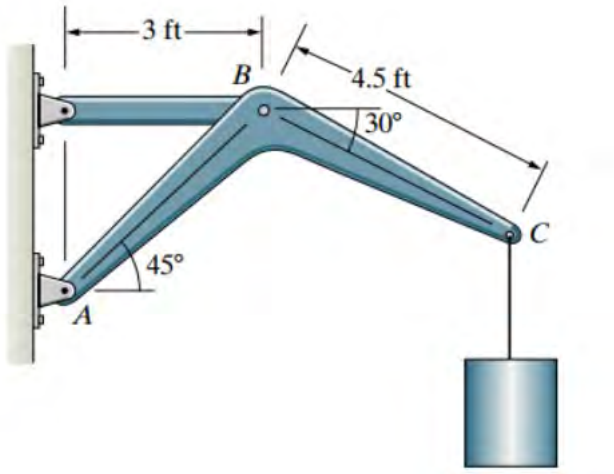
Problem 2 (5.117)

The bearings at A, B, and C do not exert couples on the bar, and do not exert forces in the direction of the axis of the bar. Determine the reactions at the bearing due to the forces on the bar.



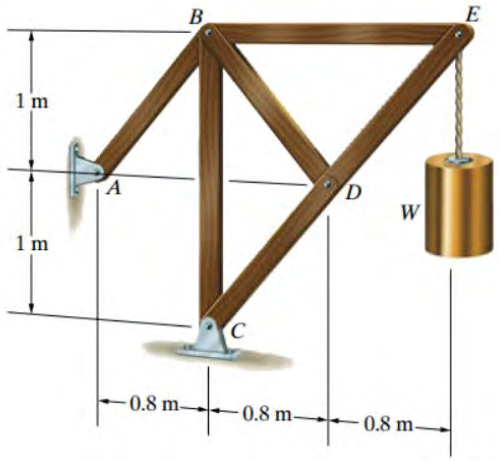
Problem 3 (5.127)

The suspended load weighs 600 lb. Use the fact that ABC is a three-force member to determine the magnitudes of the reactions at A and B.



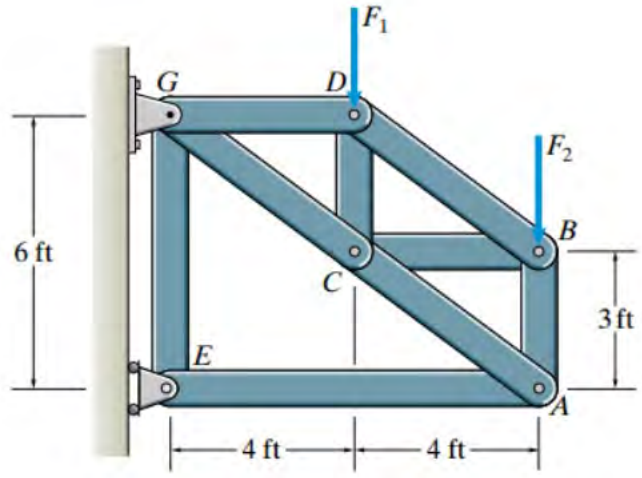
Problem 4 (6.17)

Use the **method of joints** to determine the axial forces in the members in terms of the weight W.



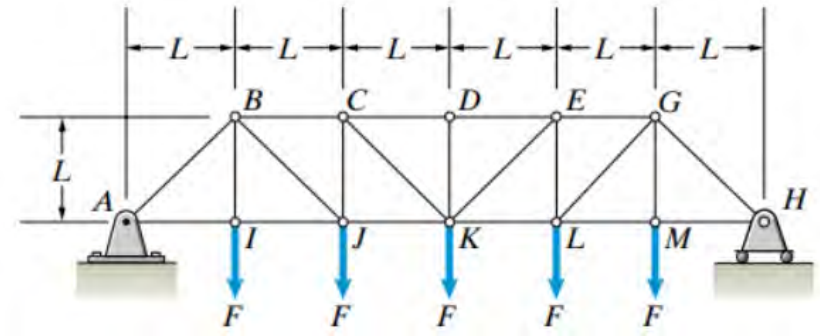
Problem 5 (6.20)

Use the **method of joints** to determine the axial forces in members *AB*, *AC*, and *BC*. The applied forces are $F_1 = 450$ lb and $F_2 = 150$ lb.



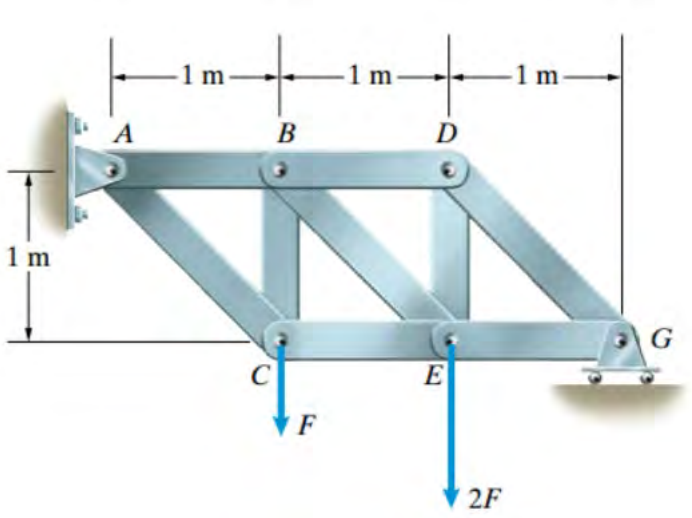
Problem 6 (6.24)

The Pratt bridge truss supports five forces ($F = 300$ kN). The dimension $L = 8$ m. Use the **method of joints** to determine the axial forces in members *BC*, *BI*, and *BJ*.



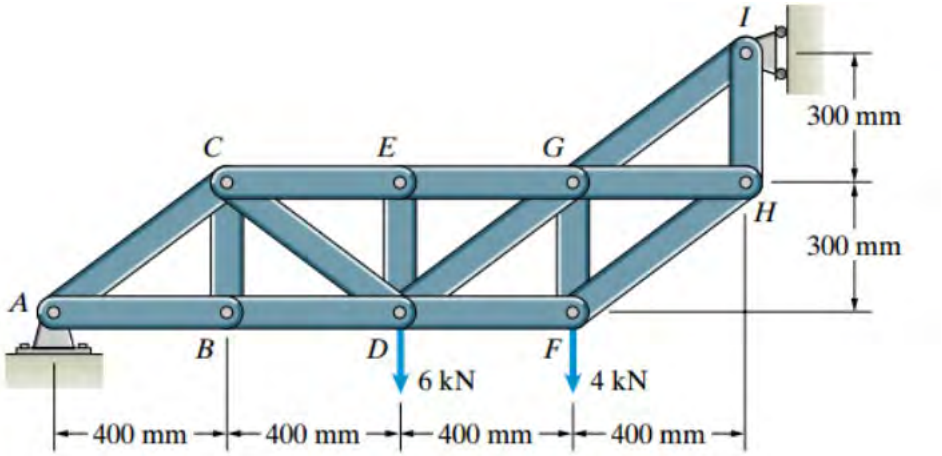
Problem 7 (6.36)

Use **the method of sections** to determine the axial forces in members *AB*, *BC*, and *CE*.



Problem 8 (6.45)

Use the **method of sections** to determine the axial forces in members *FH*, *GH*, and *GI*.



Problem 9 (6.51)

The load F $= 20$ kN and the dimension $L = 2\ m$. Use **the method sections** to determine the axial force in member HK.

Strategy: Obtain a section by cutting members HK, HI, IJ, and JM. There is a way of determining the axial forces in members JM and HK even though the free body diagram is statically indeterminate.