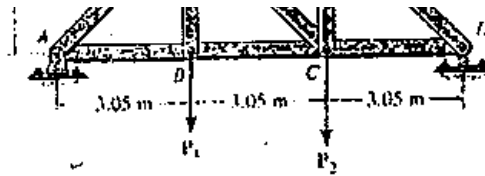
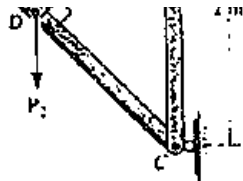
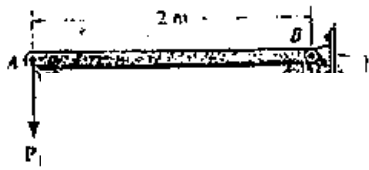


CHAPTER (6)

Structural Analysis

Problems

6-1. Determine the force in each member of the truss and tension or compression. Set $P_1=7$ kN, $P_2=7$ kN



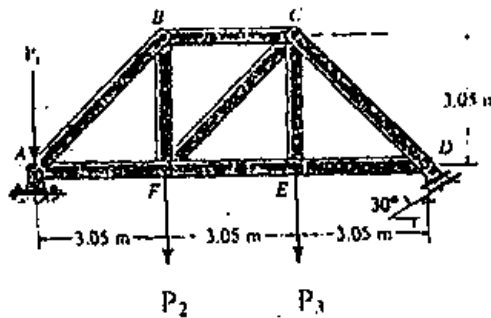
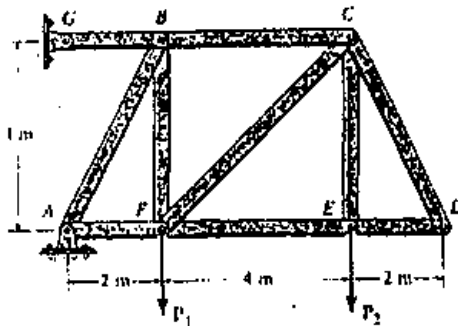
Prob 6-1/

Prob 6-3/

6-3

tens

6-4. Determine the force in each member of the truss and state if the members are in tension or compression. Set $P_1=2.22$ kN, $P_2=6.66$ kN.



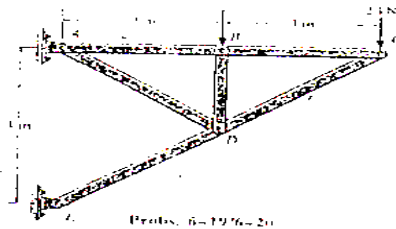
Prob 6-5/

Prob 6-7/6-8

6-5. Determine the force in each member of the truss and state if the members are in tension or compression. Set $P_1=10$ kN, $P_2=15$ kN

6-7. Determine the force in each member of the truss and state if the members are in tension or compression. Set $P_1 = 10 \text{ kN}$, $P_2 = 20 \text{ kN}$, $P_3 = 30 \text{ kN}$.

6-9. Determine the force in each member of the truss and state if the members are in tension or compression. *Hint:* The resultant force at the pin B acts along member BD .

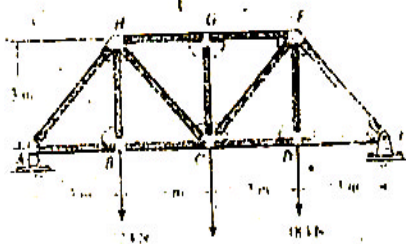


Probs. 6-19/6-20

Prob. 6-9

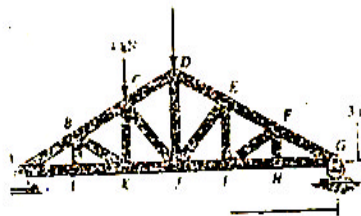
6-34. The roof truss supports the vertical loading shown. Determine the force in members BC , CK , and KJ and state if these members are in tension or compression.

6-35. The roof truss supports the vertical loading shown. Determine the force in members DE and DJ and state if these members are in tension or compression.



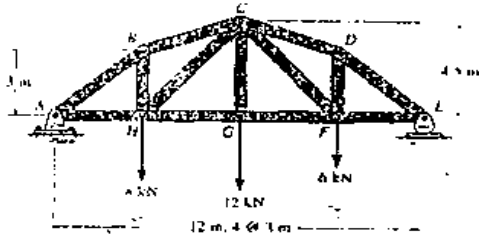
14 kN

Prob 6-32

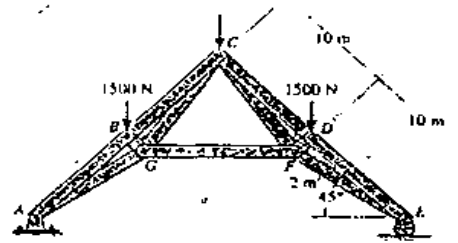


12 m 6.2 m

Prob 6-34



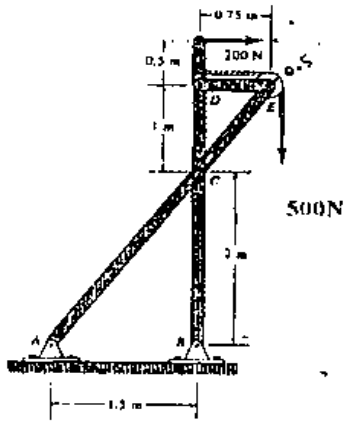
Probs. 6-20/6-21



Prob 6-42

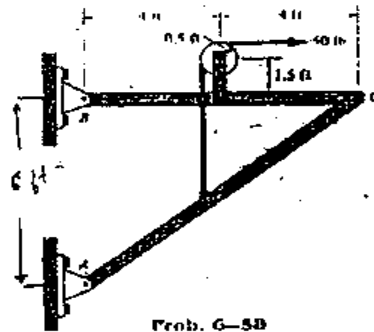
6-42. Determine the force in members CB , CG , and GF of the symmetrical truss and state if these members are in tension or compression.

6-43. Determine the horizontal and vertical components of force which the pins at D and R exert on member BCD . The pin at C is attached to member BCD and passes through the smooth slot in member ACE .



Probs 6-43 / 6-44

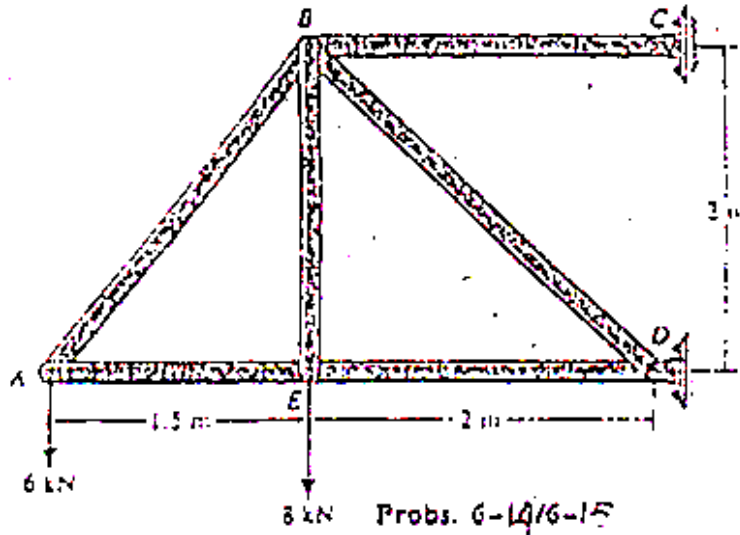
6-45. Determine the horizontal and vertical components of force that the pins at B and C exert on member AC of the frame.



Prob. 6-25

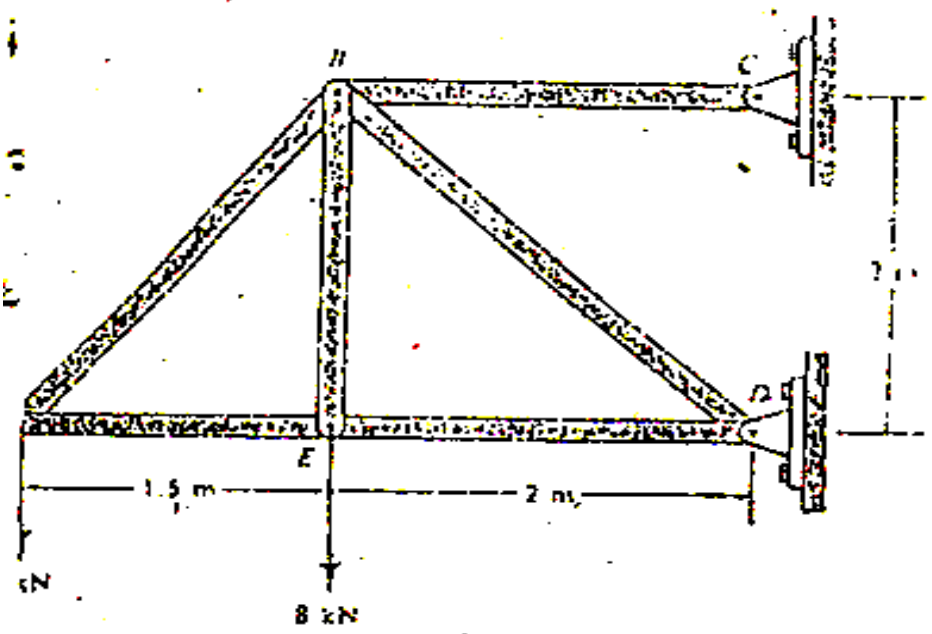
Probs. 6-25

6-15. Each member of the truss is uniform and has a mass of 8 kg/m . Remove the external loads of 6 kN and 8 kN and determine the approximate force in each member due to the weight of the truss. State if the members are in tension or compression. Solve the problem by assuming the weight of each member can be represented as a vertical force, half of which is applied at each end of the member.



Probs. 6-14/6-15

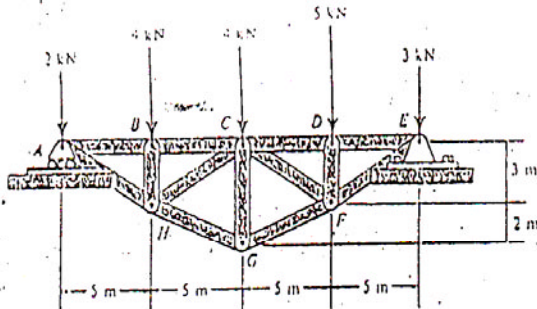
* *
 17. Determine the force in each member of the truss and state if members are in tension or compression. *Hint:* The vertical component of force at C must equal zero. Why?



ans. 6-17/6-18

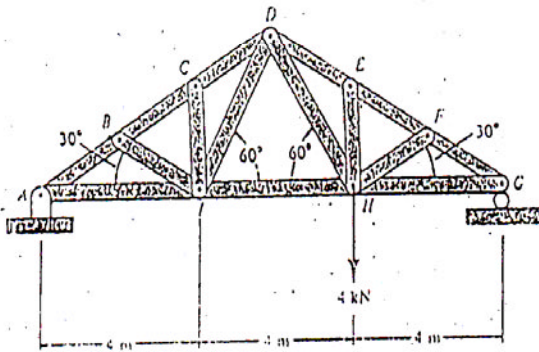
* *
 18. Each member of the truss is uniform and has a mass of 10 kg/m. Remove the external loads of 6 kN and 8 kN and determine the approximate force in each member due to the weight of the truss. Indicate whether the members are in tension or compression. Solve the problem by assuming the weight of each member can be represented as a vertical force, half of which is applied at each end of the member.

6-23 Determine the force in members BC , HC , and HC when the truss is sectioned use a single equation of equilibrium for the calculation of each force. Indicate if the members are in tension or compression.

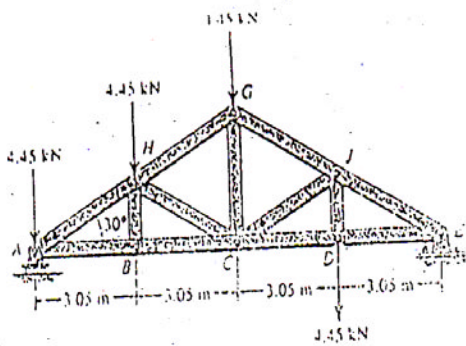


Probs. 6-23/6

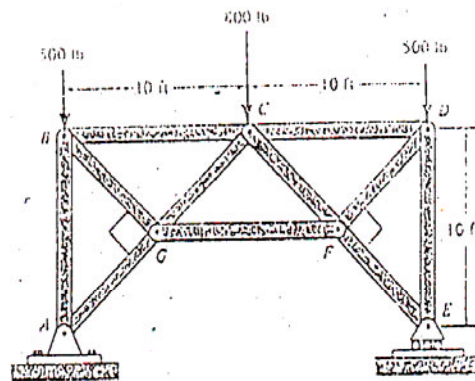
6-25 Determine the force in members DE , DH , and HI of the truss, and indicate whether the members are in tension or compression. After the truss is sectioned, use a single equation of equilibrium for the calculation of each force.



Prob. 6-25

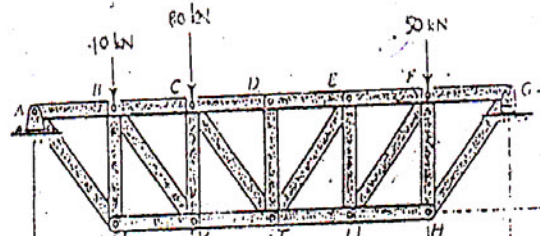


Probs. 6-23/6



Prob. 6-26

6-27 Determine the force in members CD , CJ , KJ , and DJ of the truss which serves to support the deck of a bridge. State if the members are in tension or compression.

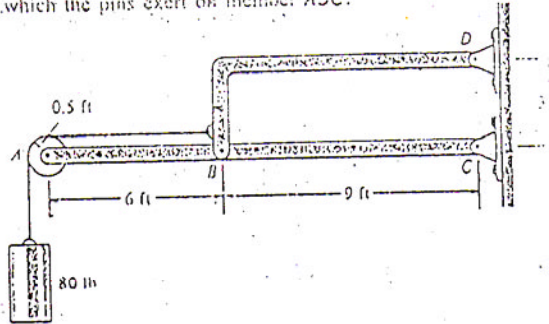


Probs. 6-27/6

6-28 Determine the force in member BC of the truss and state if this member is in tension or compression.

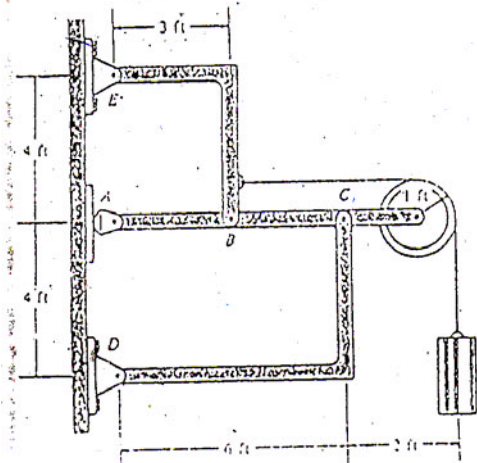
6-29 Determine the force in member BC of the truss and state if this member is in tension or compression.

6-56. Determine the horizontal and vertical components of the force which the pins exert on member ABC.



Prob. 6-56

6-54. Determine the horizontal and vertical components of force at each pin. The suspended cylinder has a weight of 80 lb.



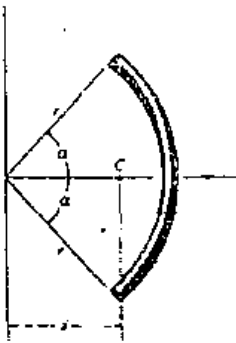
Prob. 6-54

Chapter (7)

Center of Gravity and Centroid

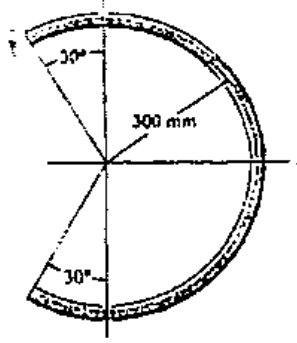
7-1*** Locate the centroid \bar{x} of the circular rod. Express the answer in terms of the radius r and semiarc angle α .

7-2*** Locate the center of mass of the homogeneous rod bent into the shape of a circular arc.



Prob. 7-1

Prob 7-1



Prob. 7-2

Prob 7-2