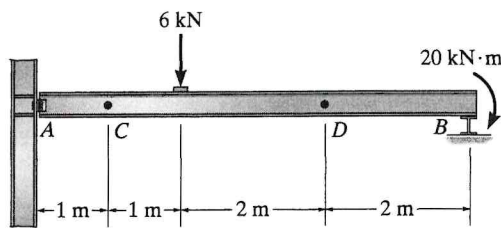


PROBLEMS

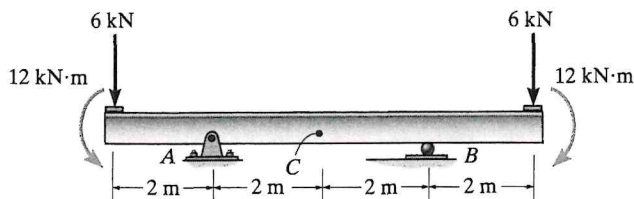
Sec. 4.1

4-1. Determine the internal normal force, shear force, and bending moment in the beam at points C and D . Assume the support at A is a pin and B is a roller.



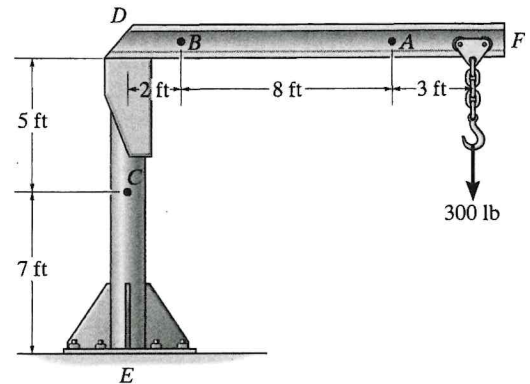
Prob. 4-1

4-2. Determine the internal normal force, shear force, and bending moment at point C .



Prob. 4-2

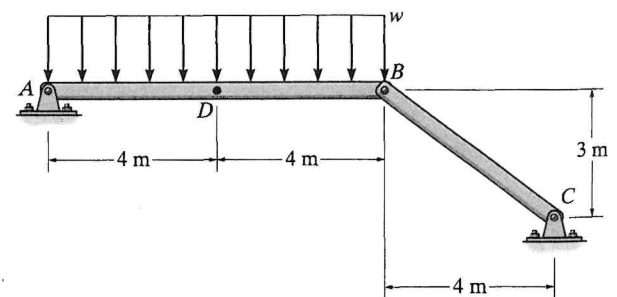
4-3. The boom DF of the jib crane and the column DE have a uniform weight of 50 lb/ft. If the hoist and load weigh 300 lb, determine the internal normal force, shear force, and bending moment in the crane at points A , B , and C .



Prob. 4-3

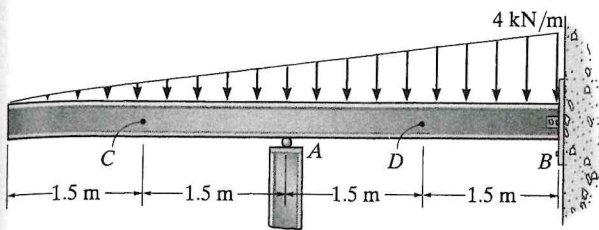
*4-4. Determine the internal normal force, shear force, and bending moment at point D . Take $w = 150 \text{ N/m}$.

4-5. The beam AB will fail if the maximum internal moment at D reaches $800 \text{ N} \cdot \text{m}$ or the normal force in member BC becomes 1500 N . Determine the largest load w it can support.



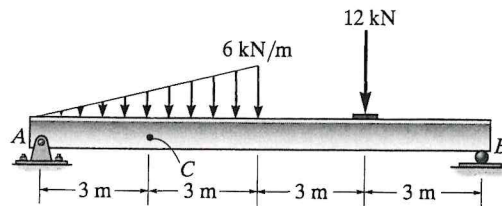
Probs. 4-4/5

4-6. Determine the internal normal force, shear force, and bending moment in the beam at points *C* and *D*. Assume the support at *A* is a roller and *B* is a pin.



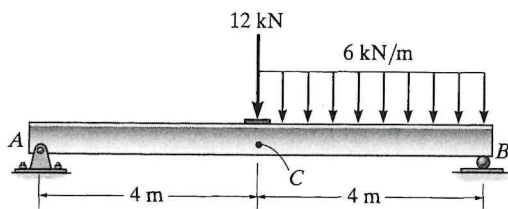
Prob. 4-6

4-9. Determine the internal normal force, shear force, and bending moment at point *C*.



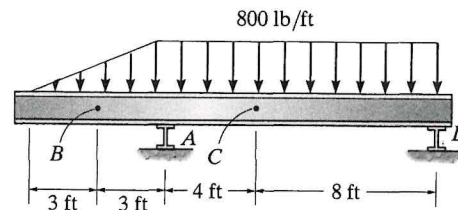
Prob. 4-9

4-7. Determine the internal normal force, shear force, and bending moment acting at point *C*, located just to the right of the 12-kN force.



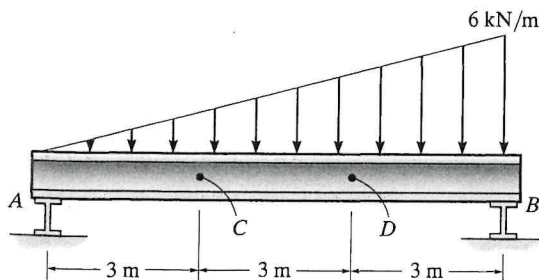
Prob. 4-7

4-10. Determine the internal normal force, shear force, and bending moment in the beam at points *B* and *C*. The support at *A* is a roller and *D* is pinned.



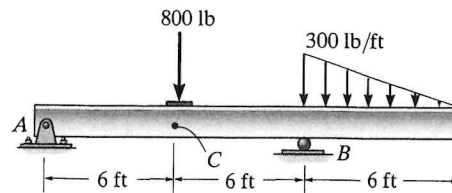
Prob. 4-10

*4-8. Determine the internal normal force, shear force, and bending moment in the beam at points *C* and *D*. Assume the support at *A* is a roller and *B* is a pin.



Prob. 4-8

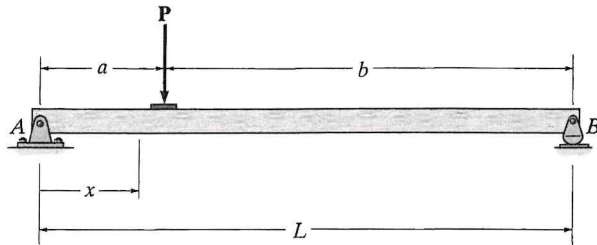
4-11. Determine the internal normal force, shear force, and bending moment in the beam at point *C*, located just to the left of the 800-lb force.



Prob. 4-11

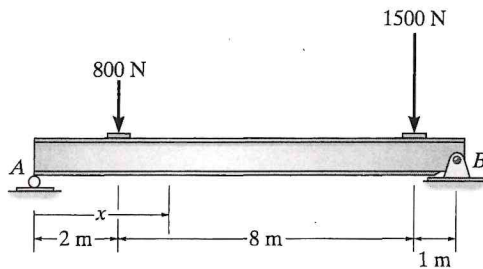
Sec. 4.2

*4-12. Determine the shear and moment throughout the beam as a function of x .



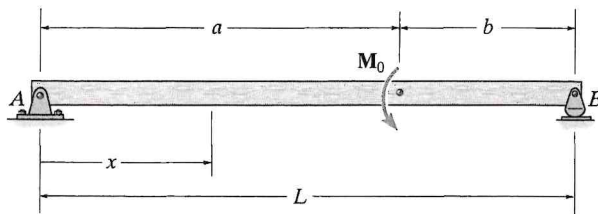
Prob. 4-12

4-13. Draw the shear and moment diagrams for the beam. Also, express the shear and moment in the beam as a function of x within the region $2\text{ m} < x < 10\text{ m}$.



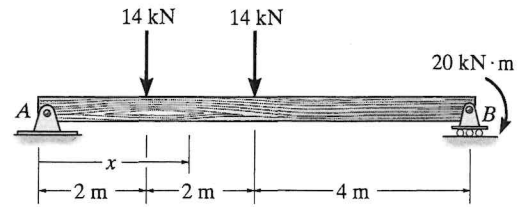
Prob. 4-13

4-14. Determine the shear and moment throughout the beam as a function of x .



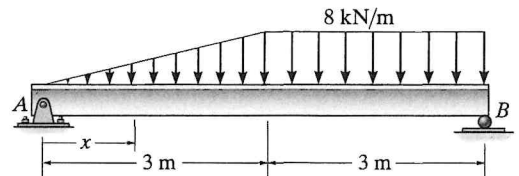
Prob. 4-14

4-15. Determine the shear and moment in the beam as a function of x , where $2\text{ m} < x < 4\text{ m}$.



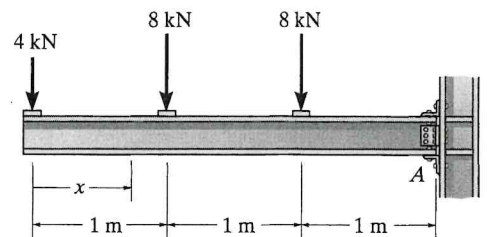
Prob. 4-15

*4-16. Determine the shear and moment throughout the beam as a function of x .



Prob. 4-16

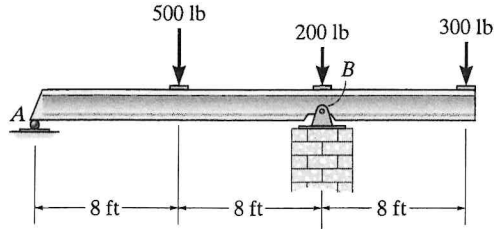
4-17. Determine the shear and moment throughout the beam as a function of x .



Prob. 4-17

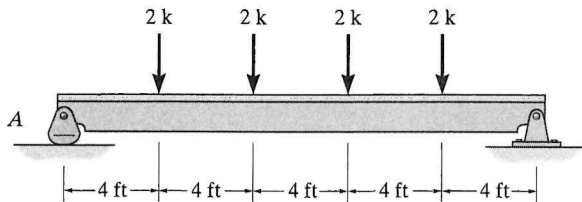
Sec. 4.3

4-23. Draw the shear and moment diagrams for the beam.



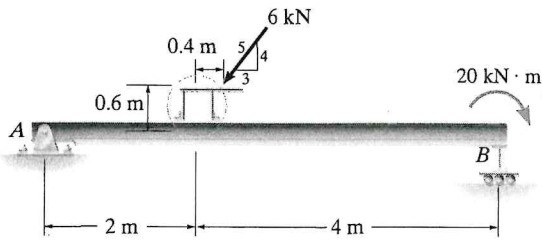
Prob. 4-23

*4-24. Draw the shear and moment diagrams for the beam.



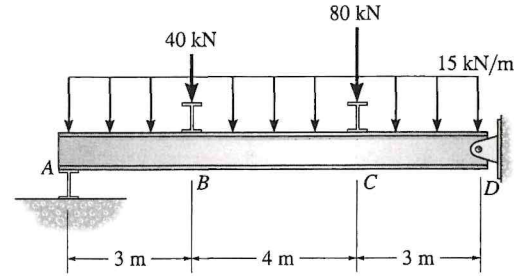
Prob. 4-24

4-25. Draw the shear and moment diagrams for the beam.



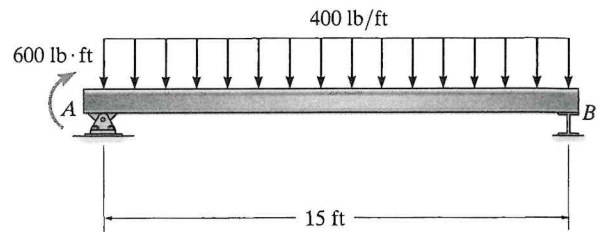
Prob. 4-25

4-26. Draw the shear and moment diagrams for the beam. Assume the support at A is a roller.



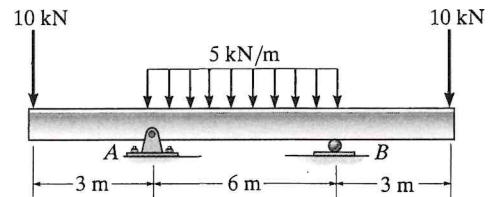
Prob. 4-26

4-27. Draw the shear and moment diagrams for the beam.



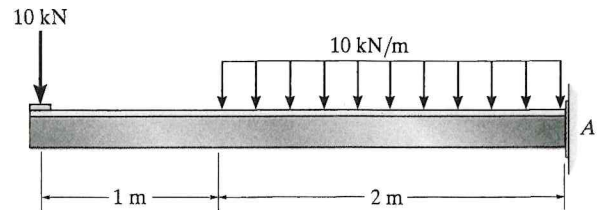
Prob. 4-27

*4-28. Draw the shear and moment diagrams for the beam.



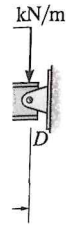
Prob. 4-28

4-29. Draw the shear and moment diagrams for the beam.

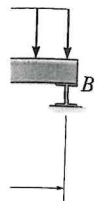


Prob. 4-29

the beam.



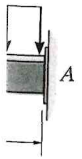
the beam.



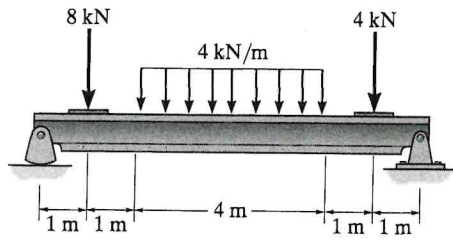
the beam.

kN

ie beam.

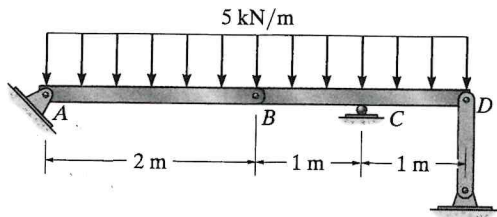


4-30. Draw the shear and moment diagrams for the beam.



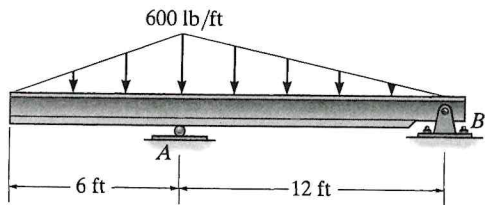
Prob. 4-30

4-31. Draw the shear and moment diagrams for the compound beam.



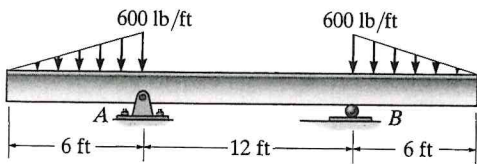
Prob. 4-31

*4-32. Draw the shear and moment diagrams for the beam.



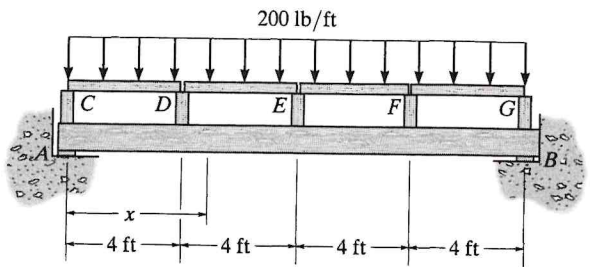
Prob. 4-32

4-33. Draw the shear and moment diagrams for the beam.



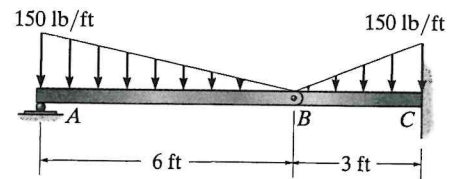
Prob. 4-33

4-34. Draw the shear and moment diagrams for the beam.



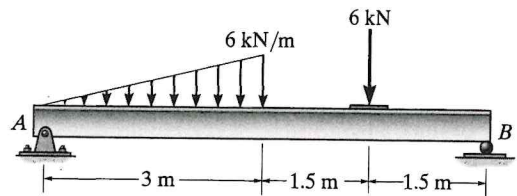
Prob. 4-34

4-35. Draw the shear and moment diagrams for the compound beam.



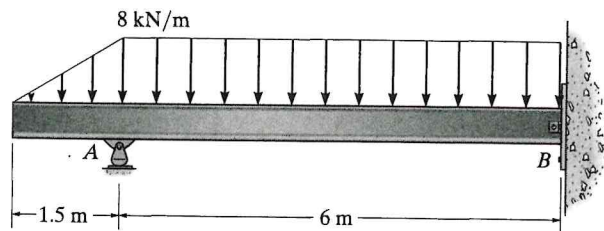
Prob. 4-35

*4-36. Draw the shear and moment diagrams for the beam.



Prob. 4-36

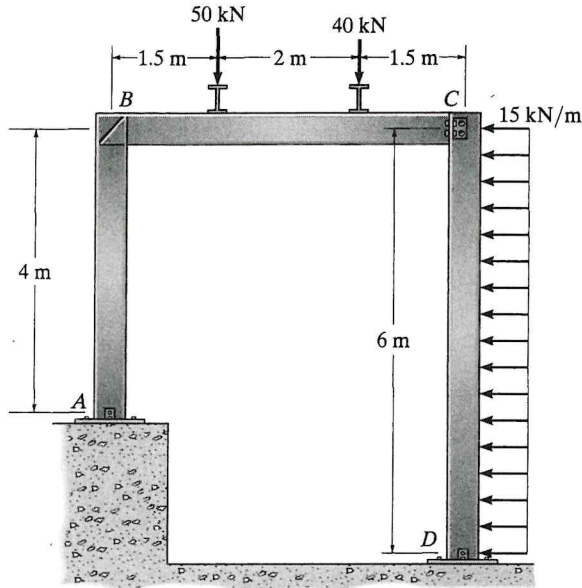
4-37. Draw the shear and moment diagrams for the beam. Assume the support at B is a pin.



Prob. 4-37

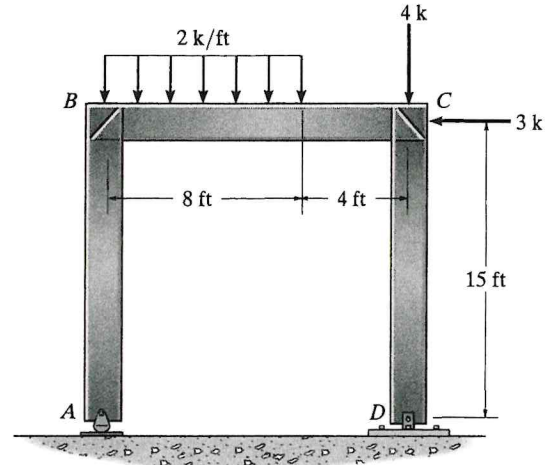
Sec. 4.4

4-38. Draw the shear and moment diagrams for each of the three members of the frame. Assume the frame is pin connected at A , C , and D and there is a fixed joint at B .



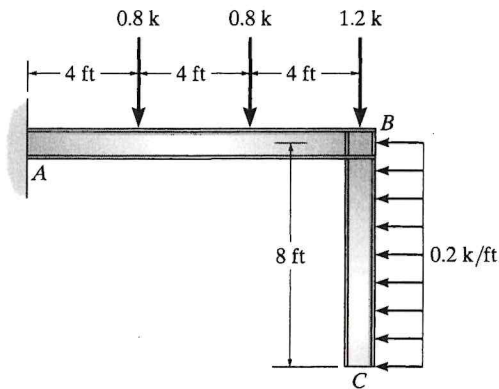
Prob. 4-38

*4-40. Draw the shear and moment diagrams for each member of the frame. Assume A is a rocker, and D is pinned.



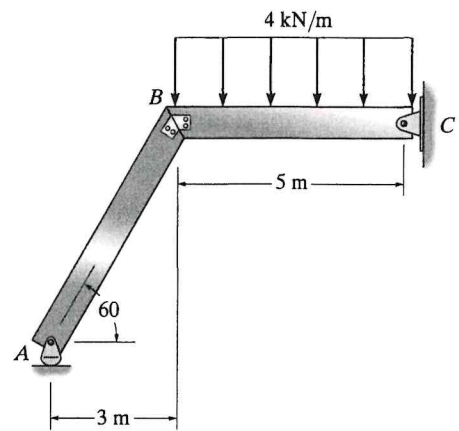
Prob. 4-40

4-39. Draw the shear and moment diagrams for each member of the frame.



Prob. 4-39

4-41. Draw the shear and moment diagrams for each member of the frame. The joint at B is fixed connected.



Prob. 4-41