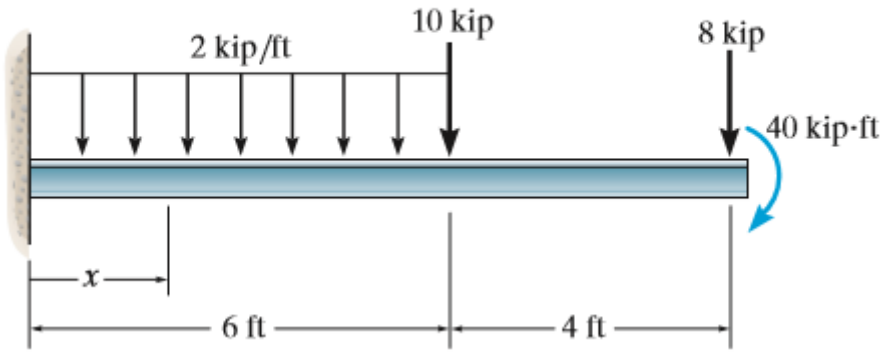
***Draw shear and moment diagrams to solve problems!**

- Homework 5: 6-3, 6-5, 6-15, 6-61, 6-68, 6-71, 6-87

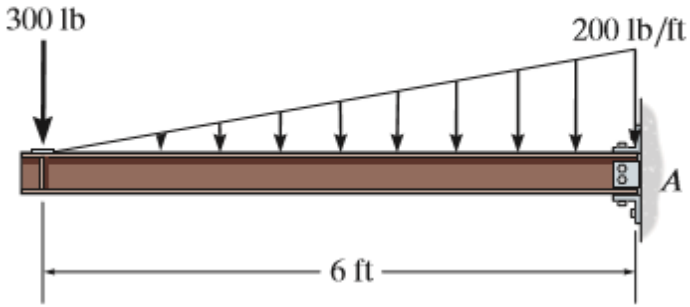
6–3.

Draw the shear and moment diagrams for the beam



6–5.

Draw the shear and moment diagrams for the beam



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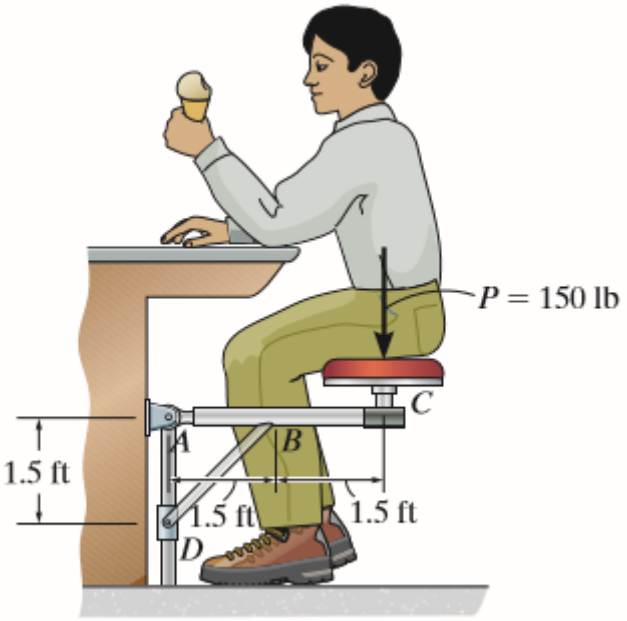
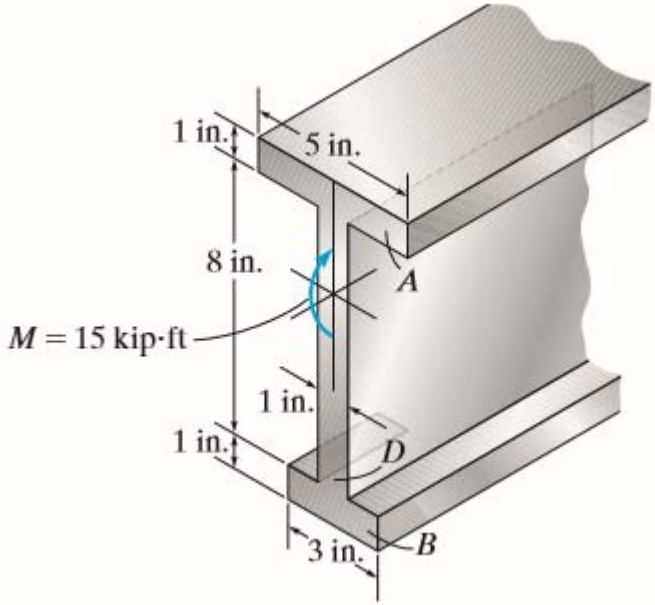
6–15.

Members ABC and BD of the counter chair are rigidly connected at B and the smooth collar at D is allowed to move freely along the vertical post. Draw the shear and moment diagrams for member ABC.



6–61.

The beam is subjected to a moment of 15 kip · ft. Determine the percentage of this moment that is resisted by the web D of the beam.



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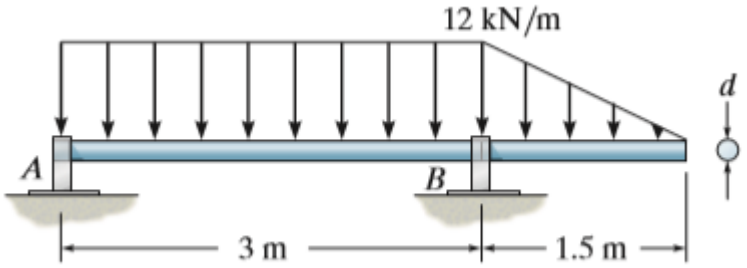
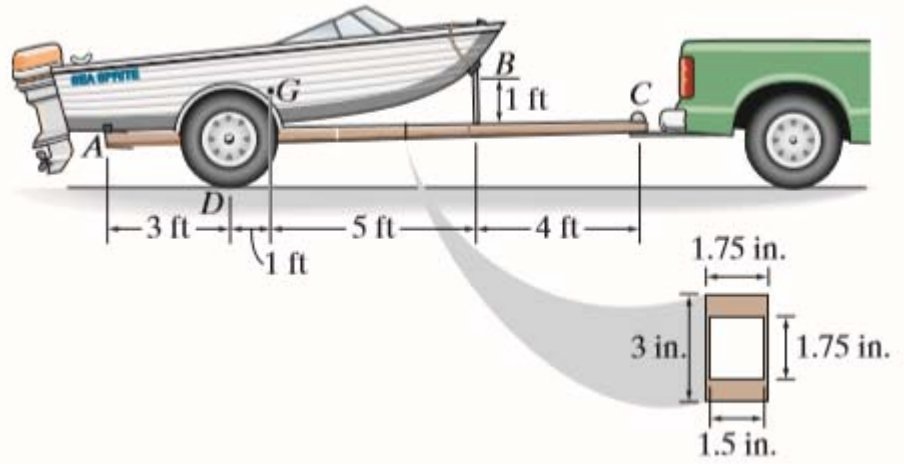
***6–68.**

The shaft is supported by smooth journal bearings at A and B that only exert vertical reactions on the shaft. Determine its smallest diameter d if the allowable bending stress is $\sigma_{allow} = 180$ MPa.



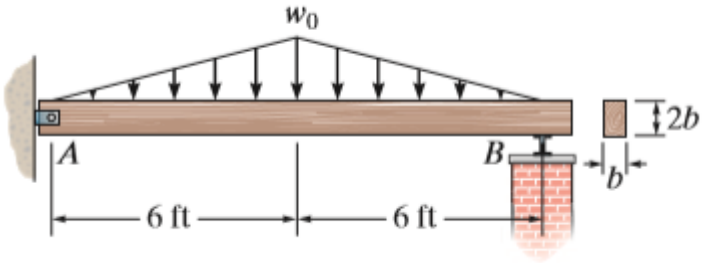
6–71.

The boat has a weight of 2300 lb and a center of gravity at G. If it rests on the trailer at the smooth contact A and can be considered pinned at B, determine the absolute maximum bending stress developed in the main strut of the trailer which is pinned at C. Consider the strut to be a box-beam having the dimensions shown.



6–87.

The beam has a rectangular cross section with $b = 4$ in. Determine the largest maximum intensity w_0 of the triangular distributed load that can be supported if the allowable bending stress is $\sigma_{allow} = 1.40$ ksi.



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