1. The beam has a rectangular cross section as shown. Determine the largest load $P$ that can be supported on its overhanging ends so that the bending stress in the beam does not exceed 10 MPa.
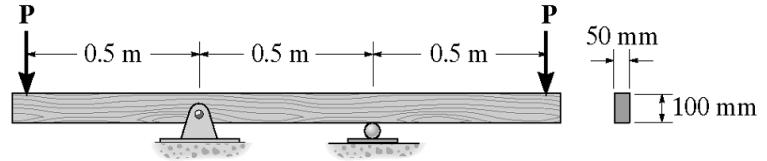


2. Two considerations have been proposed for the design of a beam. Determine which one will support a moment of 150 kN · m with smaller maximum bending stress. What is that stress? By what percentage is it more effective?
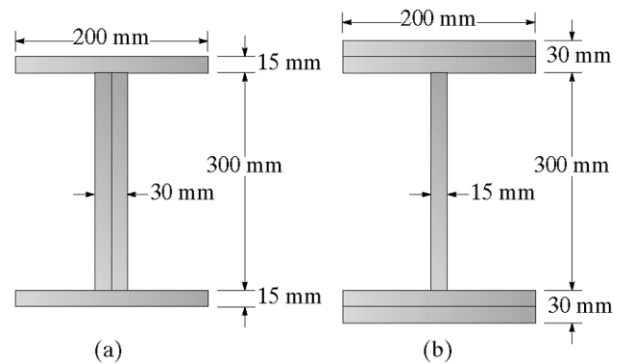
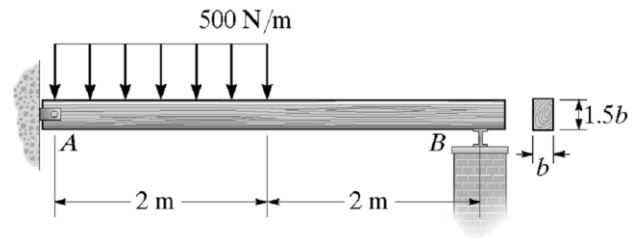3.  The wood beam shown has a rectangular cross section. Determine its required dimension $b$ if the allowable bending stress is 10 MPa.



4.  The beam is subjected to the loading shown. Determine its required cross-sectional dimension $a$, if the allowable bending stress for the material is 150 MPa.