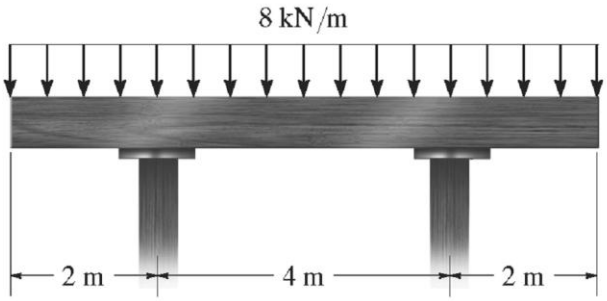
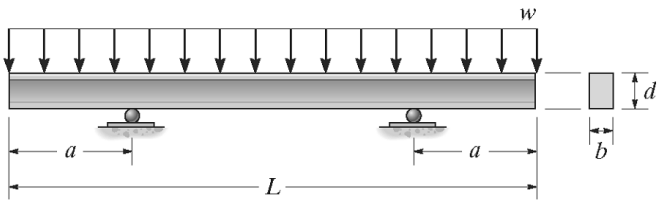
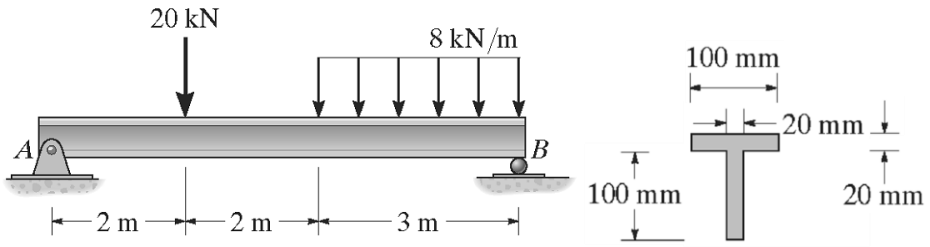
1. The simply supported beam is made of timber that has an allowable bending stress of 6.5 MPa and an allowable shearing stress of 500 kPa. Determine its dimensions if it is to be rectangular and have a height-to-width ratio of 1.25.



2. The beam is subjected to a uniform load *w*. Determine the placement *a* of the supports so that the shearing stress in the beam is as small as possible. What is this stress?



3. The *T*-beam is subjected to the loading shown. Determine the maximum transverse shearing stress in the beam at the critical section.



4. Determine the variation in the height *d* of a cantilevered beam that supports a concentrated force *P* at its end so that it has a constant maximum bending normal stress throughout its length. The beam has a constant width b_0.