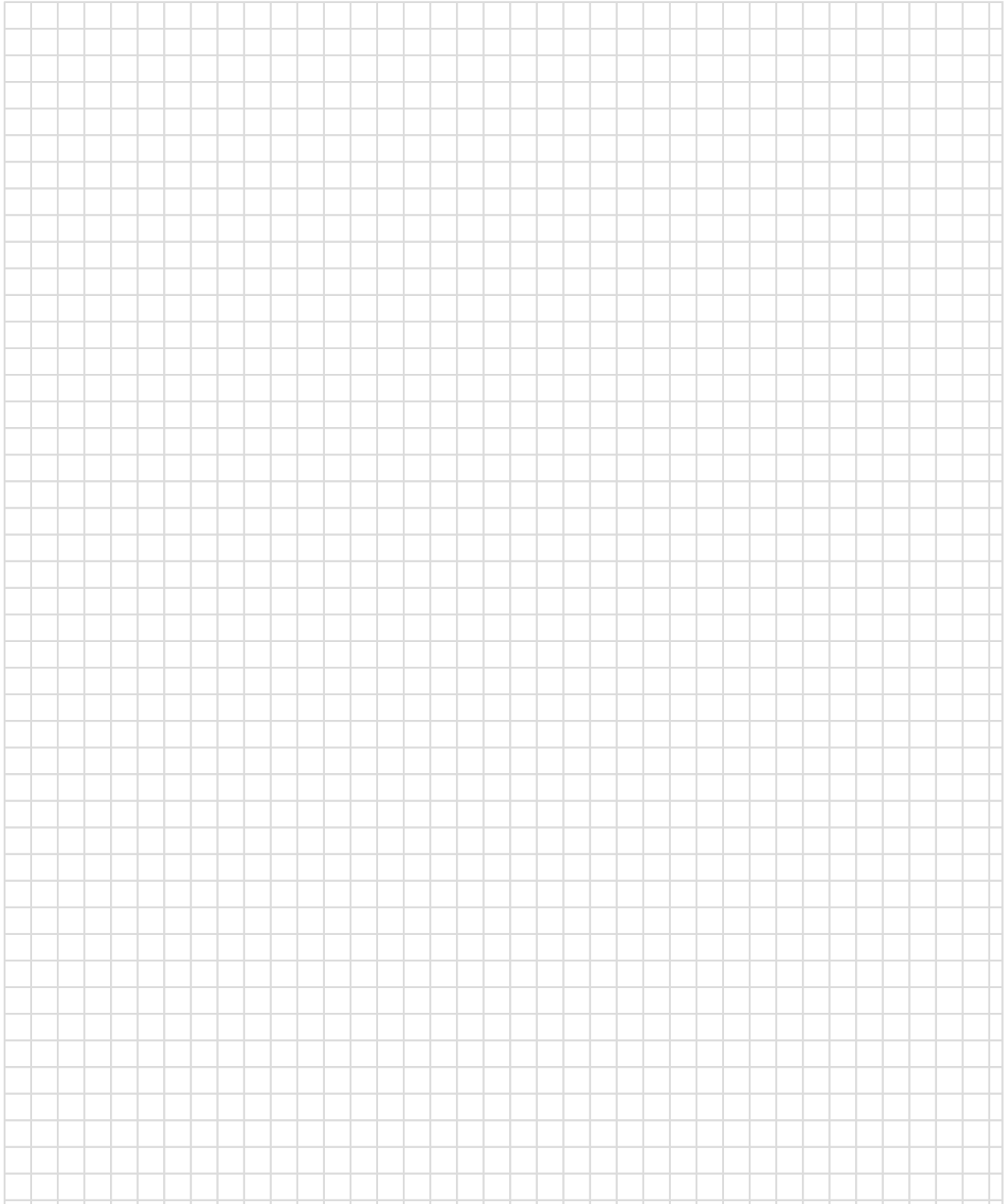


1. A simply supported W12 x 53 steel beam has a uniform live load of 3 kip/ft and a span of 20 ft. Calculate the beam deflection due to: (A) The uniform live load and (B) The dead load.

$$E = 29 \times 10^3 \text{ ksi}$$

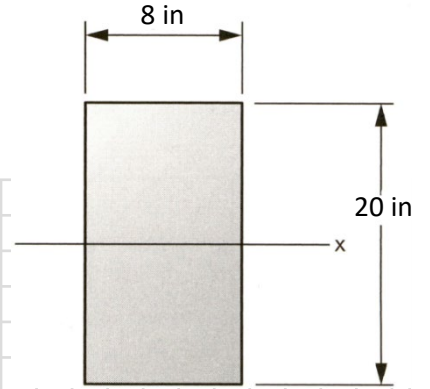
Solution.



2. The shear force on the beam shown is 30 kips. Calculate the shear stress for the beam shown at:
- a. The neutral axis
 - b. 2 in. away from the neutral axis
 - c. 4 in away from the neutral axis
 - d. at the outside surface.

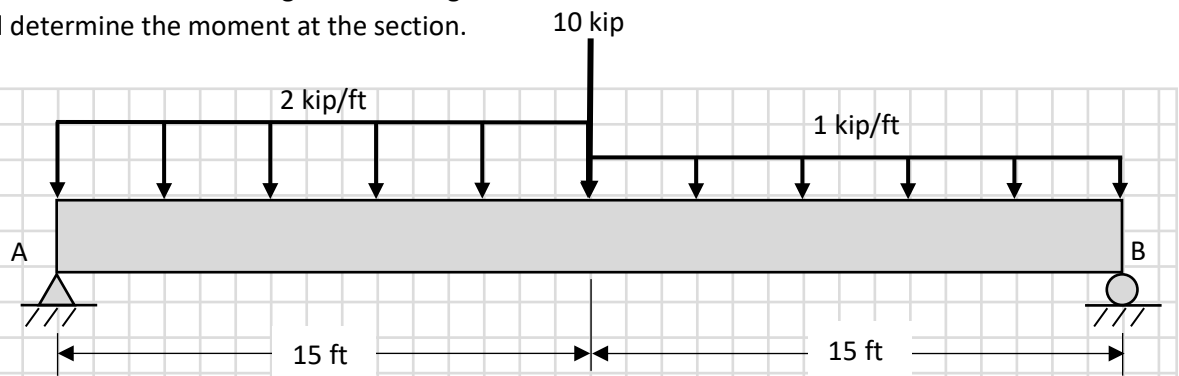
Sketch the shear distribution

Solution.



A large grid area for sketching the shear distribution and showing calculations.

3. Draw the shear force and bending moment diagram for the beam shown. Locate the section with zero shear force and determine the moment at the section.



Solution.

4. Select the lightest wide-flange steel section for the beam and load in problem 3. Use A36 steel and assume the beam is supported laterally for its entire length. The weight of the beam is already included in the uniform load.

Solution.

