CMGT 350 **Final Exam** **Fall 2020**

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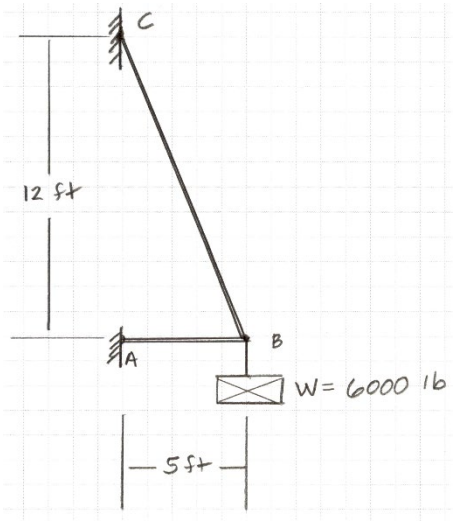
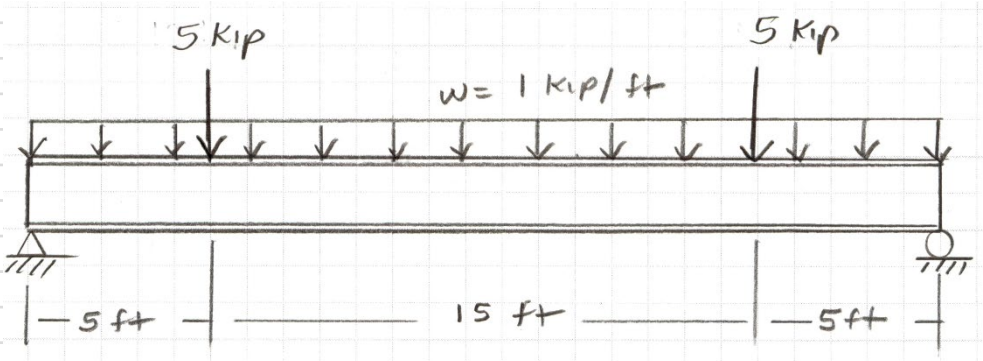
Name: _____

1. The allowable tensile stress of the steel cable is 12,000 psi. Find the diameter of the cable, to the nearest sixteenth of an inch.

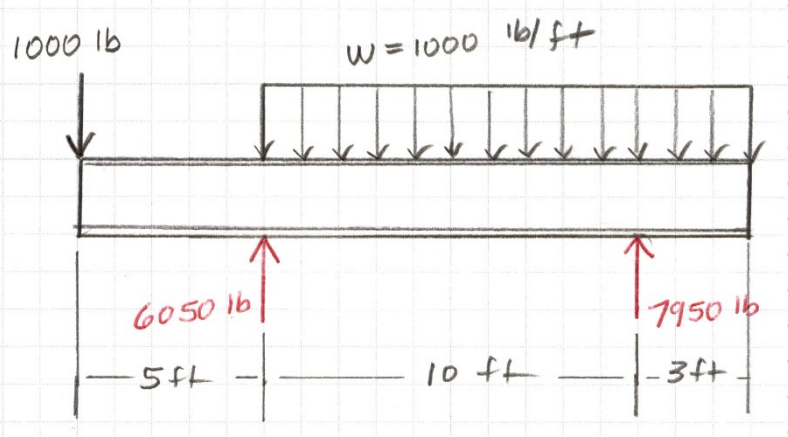


Solution.

2. A wide-flange steel beam is loaded as shown. Assuming a maximum allowable deflection of 1/240 of the span length and a depth requirement of 18-in nominal, select the most economical section. Use A36 steel.



3. Draw the shear and bending moment diagrams for the beam due to the loading shown. Locate the section(s) with zero shear and determine the moment(s) at the section(s).



Solution.

4. A nominal size 4x8 has a simple span of 20-ft. The beam is subjected to a tensile axial load of 800 lb acting at the centroid and a concentrated load of 500 lb at midspan. Determine the maximum compressive and tensile stresses in the beam.