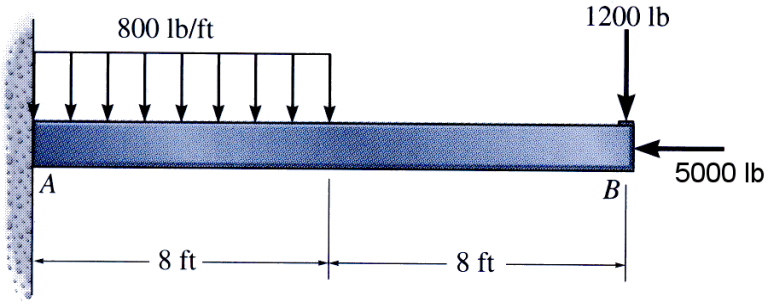
BE 110 - Mechanics of Materials - Winter 2004

Name:

Exam 2 – Bending and Shear Stress

Section: D

1. If the beam has a square cross section of 9 in. on each side, determine the maximum bending stress σ (absolute value) in the beam.



Write legibly – box answers
Include proper units

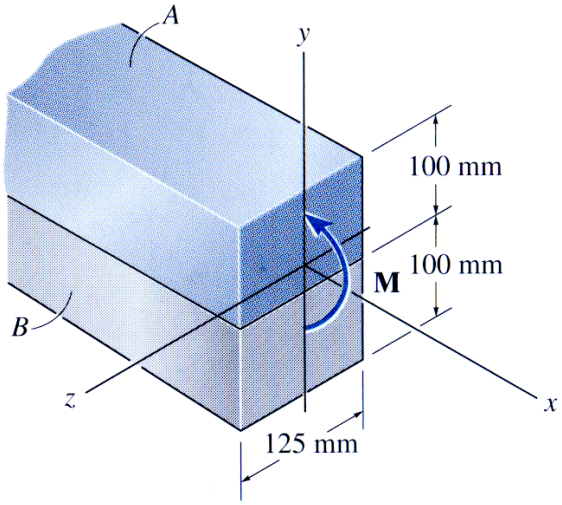
BE 110 - Mechanics of Materials - Winter 2004

Name:

Exam 2 – Bending and Shear Stress

Section: D

2. The composite beam is made of steel (A) and brass (B). If the allowable bending stress for the steel is σ_s = 180 MPa and for the brass σ_b = 60 MPa, determine the maximum moment *M* that can be applied to the beam. Assume E_s = 200 GPa and E_b = 101 MPa.



Write legibly – box answers
Include proper units

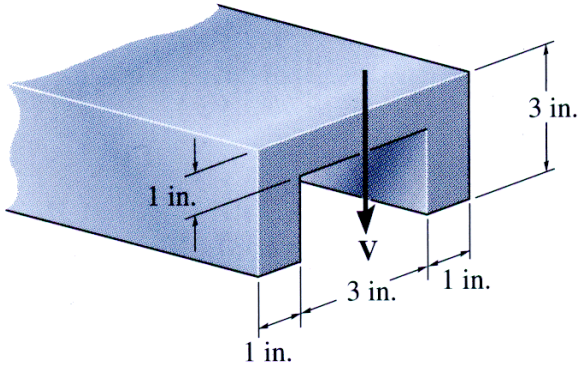
BE 110 - Mechanics of Materials - Winter 2004

Name:

Exam 2 – Bending and Shear Stress

Section: D

3. If the applied shear force $V = 18$ kips, determine the maximum shear stress τ in the beam.



Write legibly – box answers
Include proper units

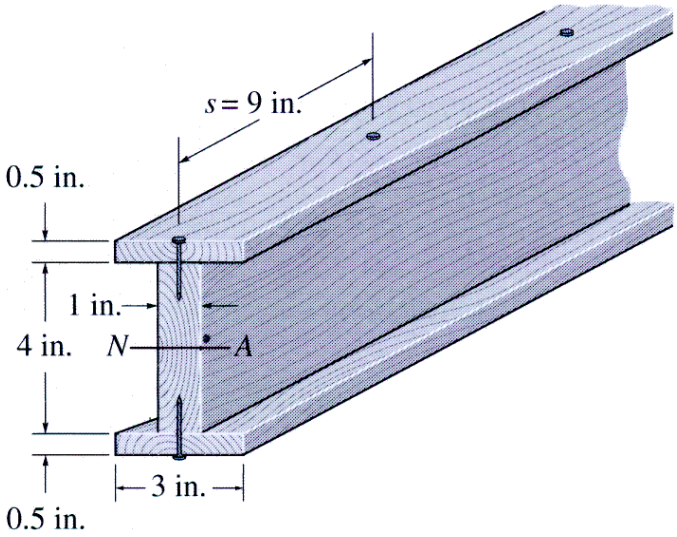
BE 110 - Mechanics of Materials - Winter 2004

Name:

Exam 2 – Bending and Shear Stress

Section: D

4. If nails having a shear strength of 40 lb are spaced at 9 in., determine the largest vertical shear force V that can supported by the beam so that the fasteners will not fail.



Write legibly – box answers
Include proper units