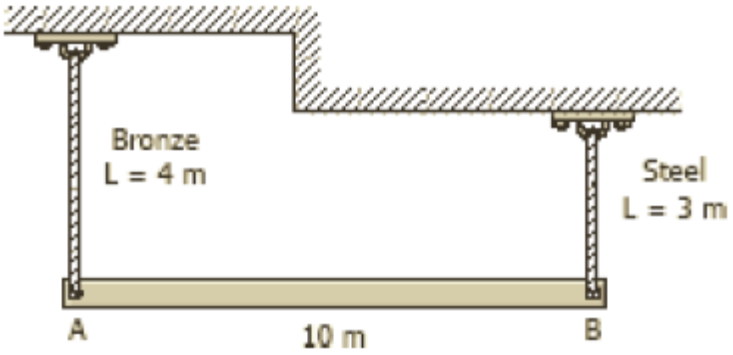
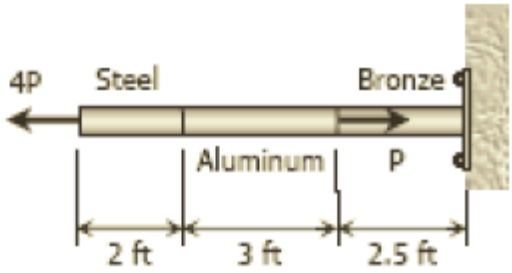
In the name of God

Mechanics of materials homework Set 1

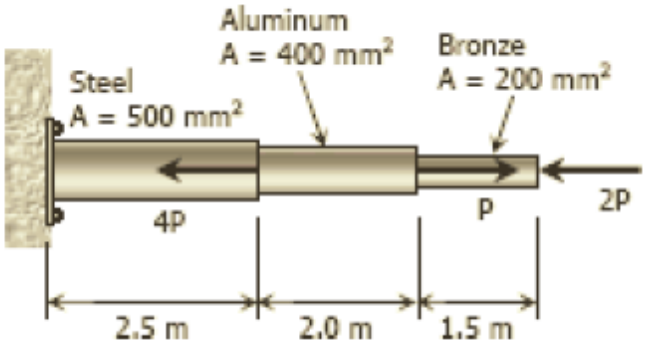
A homogeneous 800 kg bar AB is supported at either end by a cable as shown in Fig. Calculate the smallest area of each cable if the stress is not to exceed 90 MPa in bronze and 120 MPa in steel.



#2 A rod is composed of an aluminum section rigidly attached between steel and bronze sections, as shown in Fig.. Axial loads are applied at the positions indicated. If P = 3000 lb and the cross sectional area of the rod is 0.5 in2, determine the stress in each section.



#3 An aluminum rod is rigidly attached between a steel rod and a bronze rod as shown in Fig.. Axial loads are applied at the positions indicated. Find the maximum value of P that will not exceed a stress in steel of 140 MPa, in aluminum of 90 MPa, or in bronze of 100 MPa



#4 For the truss shown in Fig. P-111, calculate the stresses in members CE, DE, and DF. The crosssectional area of each member is 1.8 in2. Indicate tension (T) or compression (C).