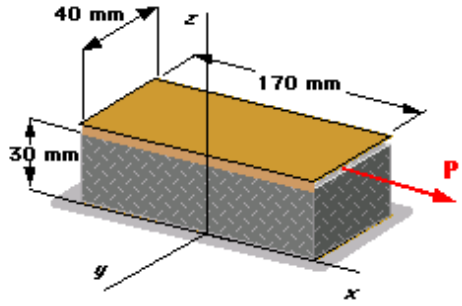
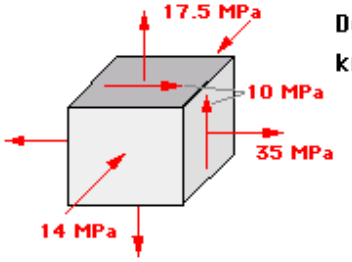
1)



A rectangular block with G = 700 MPa is bonded to two rigid horizontal plates. The lower plate is fixed, and the upper plate is subjected to a force **P**, which causes it to move 0.5 mm. Determine the shear strain in the plate and the load **P**.

2)

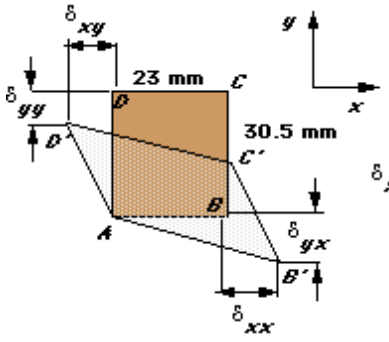


Determine the strains corresponding to the state of stress shown knowing E = 200 GPa, G = 76.92 GPa, and ν = 0.3.

3)

In a material with $E = 10 \times 10^6$ psi, $G = 3.75 \times 10^6$ psi, and ν = 0.33, the state of strain at a point is ε_x = 1500 μin./in., ε_y = 400 μin./in., ε_z = -600 μin./in., γ_{xy} = 1200 μ, γ_{xz} = 0 μ, and γ_{yz} = 0 μ. Determine the corresponding state of stress.

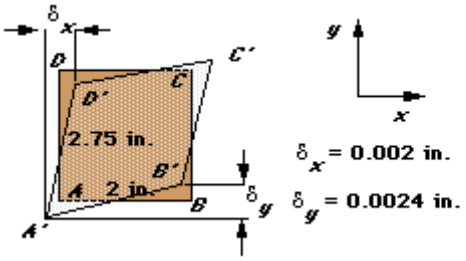
4)



Element $ABCD$ has dimensions of 23 mm × 30.5 mm before deforming to the element defined by $AB'C'D'$. Determine the state of plane stress required to cause this deformation knowing that E = 200 GPa, G = 75 GPa, and ν = 0.33.

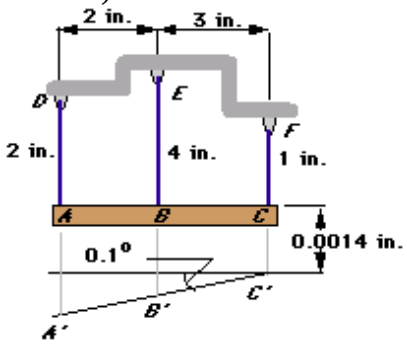
δ_{xx} = 0.0045 mm, δ_{yy} = 0.003 mm, δ_{xy} = 0.0035 mm, δ_{yx} = 0.0015 mm

5)



Material element *ABCD* has original dimensions of 2 in. × 2.75 in. before deforming to the element defined by *A′B′C′D′*. Determine the shear strain corresponding to this deformation.

6)



Three cables support a rigid beam *ABC*. End *C* of the beam displaces cable *CF* by 0.0014 in. In addition, beam *ABC* displaces so that it makes an angle of 0.1° as indicated. Determine the normal strain in each cable.