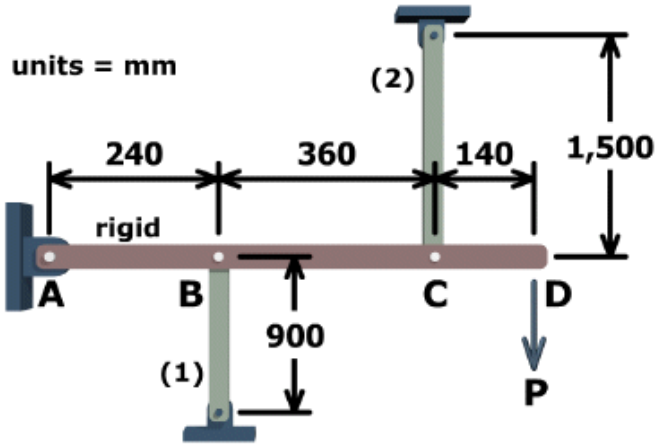
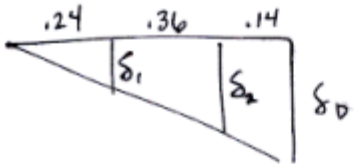
IDE 110 – Summer 2006 Quiz 3 **Name:** _____

Rigid bar ABCD is supported by bars (1) and (2). There is no strain in the bars before load P is applied. If the axial strain in rod (1) is –1,000 μm/m after load P is applied, determine:

a. the change in length of bar (1)
b. the change in length of bar (2)
c. the normal strain in bar (2)
d. the distance point D moves

(be sure to include units and box answers)





$$\frac{\delta_1}{.24} = \frac{\delta_2}{.24+.36} = \frac{\delta_D}{.24+.36+.14}$$

a) $\delta_1 = \varepsilon_1 L_1 = 1000(10^{-6})(.9) =$ **0.9 mm = 900 μm**

b) $\delta_2 = \frac{.24+.36}{.24}(\delta_1) =$ **2250 μm = 2.25 mm**

c) $\varepsilon_2 = \frac{\delta_2}{1.5} =$ **1500 μ**

d) $\delta_D = \frac{.24+.36+.14}{.24}(\delta_1) =$ **2775 μm = 2.775 mm**