$$\frac{\Delta d_2}{d_0} = -\nu\frac{\sigma}{E}$$

Now, from Equation 19.8 stress is equal to

$$\sigma = E\alpha_l(T_0 - T_f)$$

which, when substituted into the preceding equation leads to

$$\frac{\Delta d_2}{d_0} = -\frac{\nu E\alpha_l(T_0 - T_f)}{E} = -\nu\alpha_l(T_0 - T_f)$$

Solving for Δd_2 and realizing that, for brass, ν = 0.34 (Table 6.1) yields

$$\Delta d_2 = -d_0\nu\alpha_l(T_0 - T_f)$$

$$= -(10.000\text{ mm})(0.34)\left[20.0 \text{ x } 10^{-6} \text{ (°C)}^{-1}\right](20°\text{C} - 160°\text{C})$$

$$= 0.0095 \text{ mm}$$

Finally, the total Δd is just $\Delta d_1 + \Delta d_2$ = 0.0280 mm + 0.0095 mm = 0.0375 mm.