Answer on Question 38092, Physics, Optics From the picture in attachment one can easily find that

$$h = AB\sin(\alpha - \phi) = \frac{d}{\cos\alpha}\sin(\alpha - \phi)$$

We will use this formula for displacement of beam with parallel plate

$$\Delta x = \frac{d}{\cos\alpha}\sin(\alpha - \beta)$$

where α is angle of incidence, β is angle of refraction and d is thikness. We can find those angles for both plates easily from Snell law:

$$\beta_1 = \arcsin\frac{\sin\alpha}{n_1}, \qquad \beta_2 = \arcsin\frac{\sin\alpha}{n_2}$$

So we find

$$\Delta x = \Delta x_1 + \Delta x_2 = \frac{d_1}{\cos\alpha}\sin(\alpha - \beta_1) + \frac{d_2}{\cos\alpha}\sin(\alpha - \beta_2) =$$

$$= \frac{d_1}{\cos\alpha}\sin(\alpha - \arcsin\frac{\sin\alpha}{n_1}) + \frac{d_2}{\cos\alpha}\sin(\alpha - \arcsin\frac{\sin\alpha}{n_2})) \approx 7.7\,cm$$