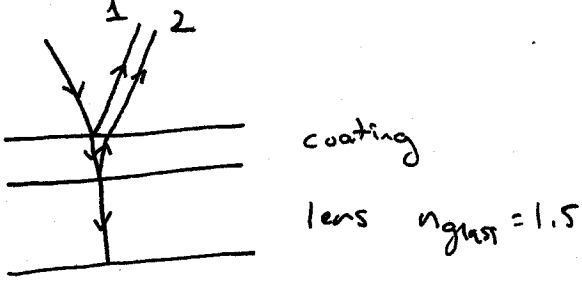
t]



We want path 1 to destructively interfere with path 2 for wave length λ. The path difference for normal incidence is $2t$. That needs to be a half-integer multiple of the wavelength of the light in the coating $\lambda_n = \frac{\lambda}{n}$, where n is the index of refraction of the coating.

In equations, this means that

$$2t = \left(m + \tfrac{1}{2}\right)\frac{\lambda}{n} \qquad (1)$$

for any integer m. To have the thinnest possible coating, choose $m=0$, so

$$t = \frac{\lambda}{4n} \qquad (2)$$

Notice that I've assumed that both ray 1 and ray 2 have a 180° phase change on reflection. This is valid because the numbers that I provided for the problem were such that $1 = n_{air} < n < n_{glass} = 1.5$.

For numbers, the answers were $\lambda = 550\,nm$, $n = 1.25$, and $t = 110\,nm$. Each class was given 2 of the 3, and asked to compute the third.