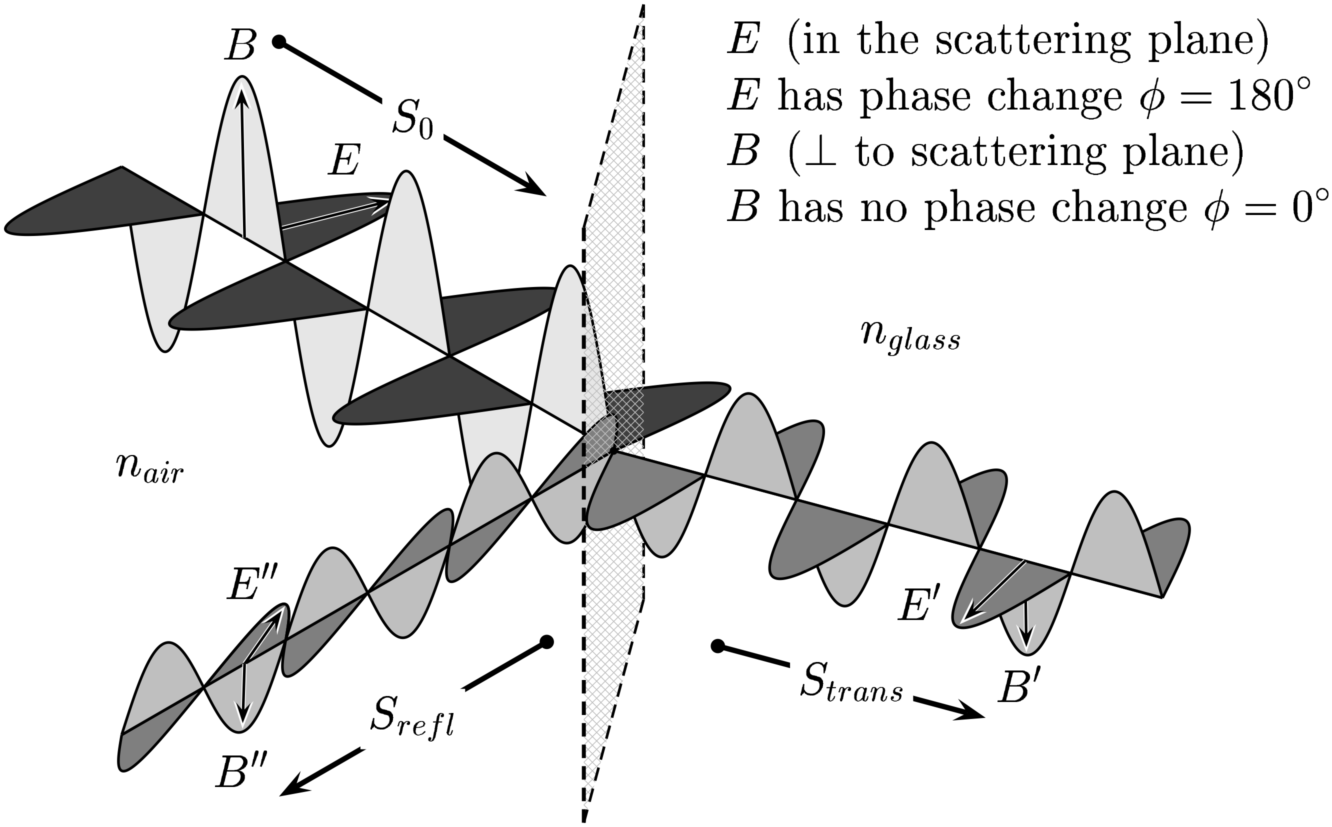

The fraction of light intensity reflected and transmitted (refracted) from an air-glass interface at normal ($\theta = 0^\circ$) incidence is

A) $$\frac{I_{refl}}{I_0} = \left(\frac{2\,n_1}{n_2 + n_1}\right)^2 \qquad \text{and} \qquad \frac{I_{trans}}{I_0} = \left(\frac{2\,n_2}{n_2 + n_1}\right)^2 .$$

B) $$\frac{I_{refl}}{I_0} = \left(\frac{2\,n_1}{n_2 + n_1}\right)^2 \qquad \text{and} \qquad \frac{I_{trans}}{I_0} = \left(\frac{n_2 - n_1}{n_2 + n_1}\right)^2 .$$

C) $$\frac{I_{refl}}{I_0} = \left(\frac{n_2 - n_1}{n_2 + n_1}\right)^2 \qquad \text{and} \qquad \frac{I_{trans}}{I_0} = \left(\frac{2\,n_1}{n_2 + n_1}\right)^2 .$$

The amplitudes are $A_{trans} = \dfrac{2\sin\theta_2 \ \cos\theta_1}{\sin(\theta_1+\theta_2)}\, A_0$ and $A_{refl} = -\dfrac{\sin(\theta_1-\theta_2)}{\sin(\theta_1+\theta_2)}\, A_0$.

When $\theta_1 = \theta_2 = 0°$, using $\cos 0° = 1$ and $\dfrac{\sin\theta_1}{\sin\theta 2} = \dfrac{n_2}{n_1}$, we have $A_{trans} = \dfrac{2\,n_1}{n_1+n_2}\, A_0$ and $A_{refl} = \dfrac{n_2-n_1}{n_1+n_2}\, A_0$. Light intensity is proportional to the square of the amplitude, $\dfrac{I_{refl}}{I_0} = \left(\dfrac{n_2-n_1}{n_1+n_2}\right)^2$ and $\dfrac{I_{trans}}{I_0} = \left(\dfrac{2\,n_1}{n_1+n_2}\right)^2$.

Answer **C**.