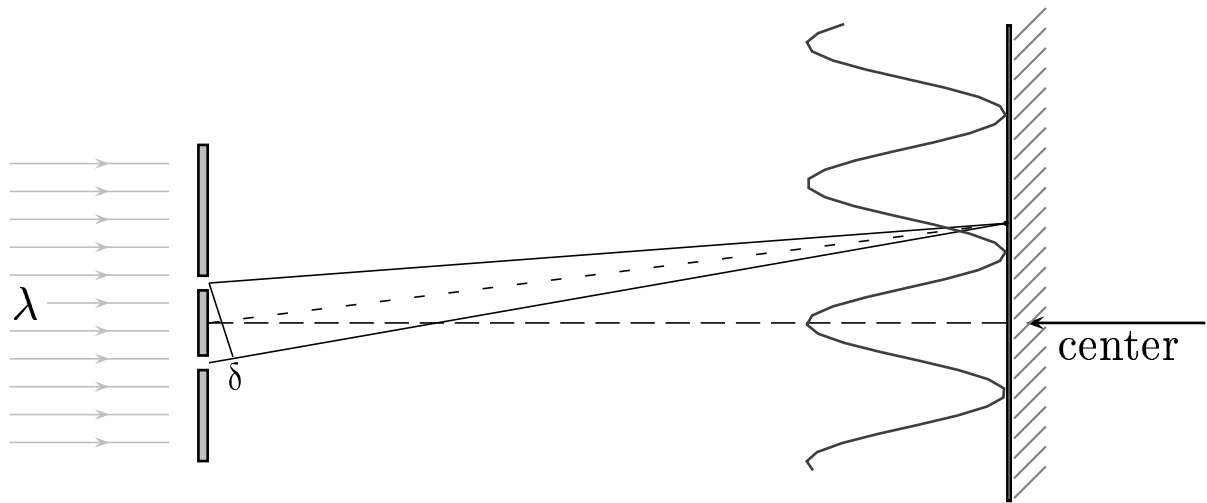


Consider the setup of a double slit experiment. Denote the intensity at the center of the screen to be I_0 .



Find the corresponding intensity I for a path difference $\delta = \frac{\lambda}{6}$.

A) $I = \frac{I_0}{4}$.

B) $I = \frac{I_0}{2}$.

C) $I = \frac{3 I_0}{4}$.

$$I = I_0 \cos^2 \left(\frac{\phi}{2} \right)$$

$$\phi = k \delta$$

$$k = \frac{2 \pi}{\lambda}$$

Therefore the phase difference is

$$\phi = \frac{2 \pi}{\lambda} \frac{\lambda}{6} = \frac{\pi}{3}$$

And $I = I_0 \cos^2 \left(\frac{\pi}{6} \right) = \frac{3 I_0}{4}$.

Answer **C**.