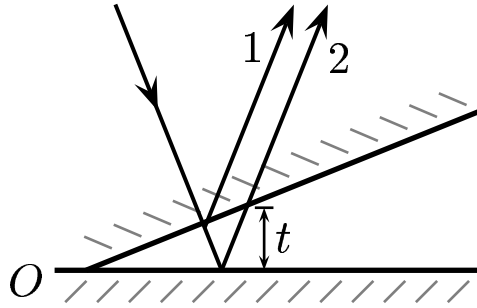


Given: $t = 1.6 \mu$, $\lambda = 0.5 \mu$.



Determine number of dark fringes in the interval OA . The dark fringe at O is the first fringe. There after a dark fringe is included in the count only when the minimum point is included.

- A) $N_{dark} = 5$
- B) $N_{dark} = 6$
- C) $N_{dark} = 7$
- D) $N_{dark} = 8$

$N_{dark} = \text{Integer} \left(\frac{\phi}{2\pi} + \frac{1}{2} \right)$, with $\phi = \phi_{path} + |\phi_{refl1} - \phi_{refl2}|$ and “floor or integerize”: e.g. $\text{floor}(3.9) = 3$. Therefore

$$\frac{\phi}{2\pi} = \frac{2t}{\lambda} + \frac{1}{2} = \frac{2 \times 1.6}{0.5} + 0.5 = 6.9$$

$$N_{dark} = \text{Integer}(6.9 + 0.5) = 7.$$

Answer **C**.