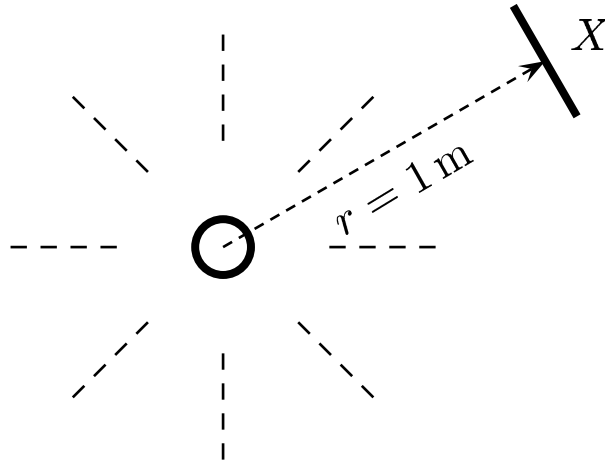


Given a light bulb with a power 120 W. A book is placed at point  $X$ , which is at a distance  $r = 1$  m away. The book is perpendicular to the incident light. Its area is about  $0.1 \text{ m}^2$ . For a black surface, the pressure given by light is  $\frac{I}{c}$ ; for a totally reflecting surface, the pressure is  $P = \frac{2I}{c}$ , where  $I$  is the intensity of light at  $X$ .



If  $\frac{1}{4}$  of the light is reflected, find the pressure  $P$  on the book.

A)  $P = \frac{1}{2} \frac{I}{c}$

B)  $P = \frac{3}{4} \frac{I}{c}$

C)  $P = \frac{5}{4} \frac{I}{c}$

For the  $\frac{1}{4}$  of the light which is reflected, it contributes  $\frac{1}{4} \times \frac{2I}{c}$  to the pressure.

For the  $\frac{3}{4}$ , which is absorbed, it contributes  $\frac{3}{4} \times \frac{I}{c}$  to the pressure.

Thus total pressure is  $P = \frac{2}{4} + \frac{3}{4} \times \frac{I}{c} = \frac{5}{4} \frac{I}{c}$

Answer **C**.