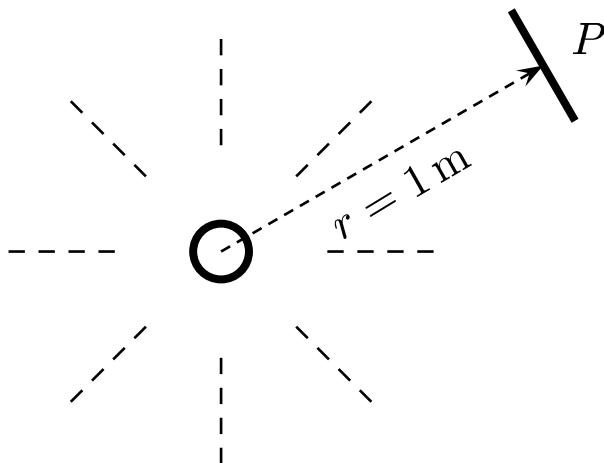


Given a light bulb with a power 120 W. A book is placed at point  $P$ , which is at a distance  $r = 1$  m away. The book is perpendicular to the incident light. Its area is about  $0.1 \text{ m}^2$ .



Find the intensity at  $P$ ,  $I = \langle \vec{S} \rangle$ , where  $\vec{S} = \vec{E} \times \vec{B}$ .

- A)  $I \approx 10 \text{ W/m}^2$
- B)  $I \approx 100 \text{ W/m}^2$
- C)  $I \approx 500 \text{ W/m}^2$
- D)  $I \approx 1200 \text{ W/m}^2$

Since the light radiates isotropically, the power emitted is through a spherical surface, *i.e.*  $4 \pi r^2$ .

$$I = \frac{\text{power}}{\text{area}} = \frac{120 \text{ W}}{4 \pi r^2} = 10 \text{ W/m}^2.$$

Answer **A**.

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