

- 24** A source of sound of constant power  $P$  is situated in an open space. The intensity  $I$  of sound at distance  $r$  from this source is given by

$$I = \frac{P}{4\pi r^2}.$$

How does the amplitude  $a$  of the vibrating air molecules vary with the distance  $r$  from the source?

**A**  $a \propto \frac{1}{r}$

**B**  $a \propto \frac{1}{r^2}$

**C**  $a \propto r$

**D**  $a \propto r^2$

**Space for working**