24 A siren emits sound of frequency 1000 Hz. The siren moves at 20 m s^{-1} towards an observer who is standing still.

The speed of sound in the air is 330 m s^{-1}.

Which expression would correctly give the frequency heard by the observer?

A $\dfrac{1000 \times 330}{330 + 20}$

B $\dfrac{1000 \times 330}{330 - 20}$

C $\dfrac{1000\,(330 + 20)}{330}$

D $\dfrac{1000\,(330 - 20)}{330}$

25 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 $a \propto \dfrac{1}{r}$ **B** $a \propto \dfrac{1}{r^2}$ **C** $a \propto r$ **D** $a \propto r^2$