

- 22** A loudspeaker is playing music in a room. The door to the room is open and has a width of 0.80 m.

Sound waves of many different frequencies pass through the doorway and diffract. The speed of sound in air is 340 m s^{-1} .

Which frequency of sound wave diffracts the most as it passes through the doorway?

- A** $2.4 \times 10^{-3} \text{ Hz}$
- B** $8.0 \times 10^{-1} \text{ Hz}$
- C** $2.7 \times 10^2 \text{ Hz}$
- D** $4.3 \times 10^2 \text{ Hz}$