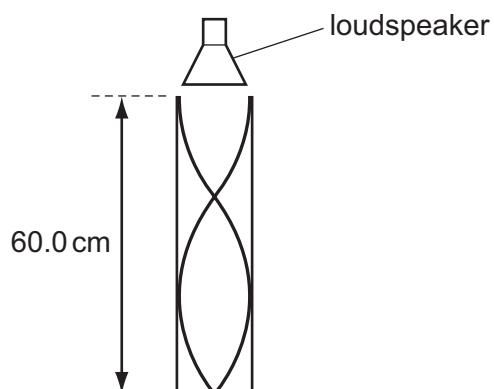


- 27** The sound from a loudspeaker placed above a tube causes resonance of the air in the tube.

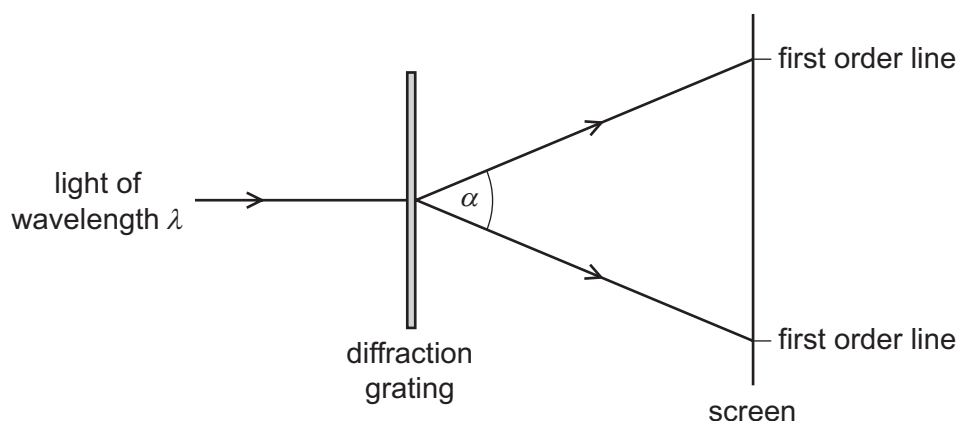
A stationary wave is formed with two nodes and two antinodes as shown.



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

What is the frequency of the sound?

- A** 413 Hz **B** 550 Hz **C** 830 Hz **D** 1650 Hz
- 28** Light of wavelength λ passes through a diffraction grating with slit spacing d . A series of lines is observed on a screen.



What is the angle α between the two first order lines?

- A** $\sin^{-1}\left(\frac{\lambda}{2d}\right)$ **B** $\sin^{-1}\left(\frac{\lambda}{d}\right)$ **C** $2\sin^{-1}\left(\frac{\lambda}{2d}\right)$ **D** $2\sin^{-1}\left(\frac{\lambda}{d}\right)$

Space for working