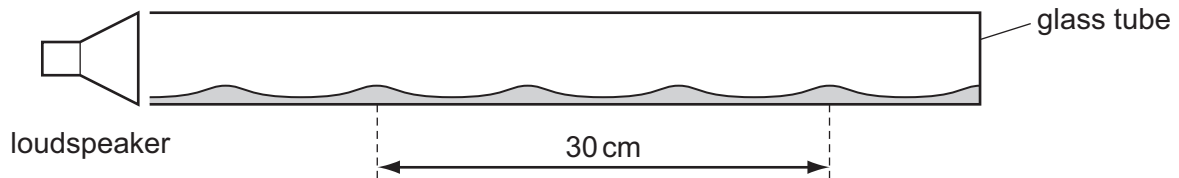29 A horizontal glass tube, closed at one end, has a layer of dust laid inside it on its lower side. Sound is emitted from a loudspeaker that is placed near the open end of the tube.

The frequency of the sound is varied and, at one frequency, a stationary wave is formed inside the tube so that the dust forms small heaps.

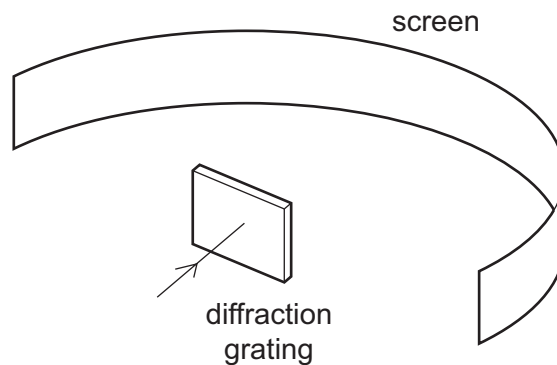The distance between four heaps of dust is 30 cm.

The speed of sound in the tube is $330\,\mathrm{m\,s^{-1}}$.

What is the frequency of the sound emitted by the loudspeaker?

A 1650 Hz   **B** 2200 Hz   **C** 3300 Hz   **D** 6600 Hz

30 Monochromatic light of wavelength 690 nm passes through a diffraction grating with 300 lines per mm, producing a series of maxima on a screen.

What is the greatest number of maxima that can be observed?

A 4   **B** 5   **C** 8   **D** 9

Space for working