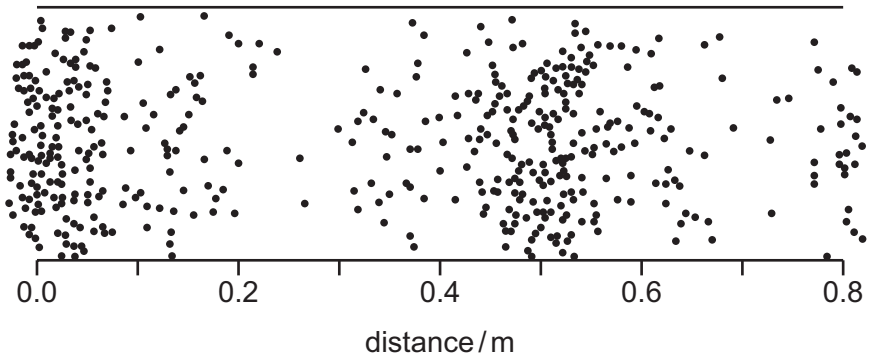
23 When a guitar string is plucked, it causes a longitudinal sound wave in the air, as shown.



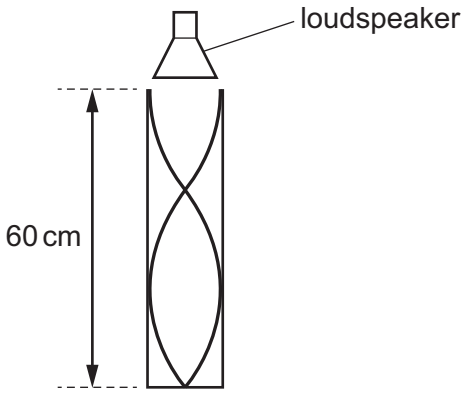
The speed of sound in the air is 340 m s^{-1}.

What is the approximate frequency of the sound wave shown?

A 430 Hz **B** 680 Hz **C** 1100 Hz **D** 1400 Hz

24 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 the air is 340 m s^{-1}.

What is the frequency of the sound?

A 430 Hz **B** 570 Hz **C** 850 Hz **D** 1700 Hz

25 A police car has a two-tone siren emitting sound of frequencies of 700 Hz and 1000 Hz.

The police car is travelling at a speed of 40.0 m s^{-1} towards a stationary observer. The speed of sound in the air is 340 m s^{-1}.

What is the difference between the two frequencies of the sound that is heard by the observer?

A 268 Hz **B** 300 Hz **C** 335 Hz **D** 340 Hz