

W9.01**Sound Waves**

1. Explain why a bell ringing on the inside of a vacuum chamber cannot be heard on the outside.
2. A singer claims to be able to shatter a wine glass by singing a particular note. Could this be true? Explain.
3. In an adult human, the ear canal, which is the hollow tube leading from the outer ear to the eardrum, has a length of about 2.5 cm. How does the resonance frequency of such a tube correspond with the sensitivity curve of the ear?
4. The "buzz" of a mosquito produces an intensity having a 40-dB rating. How many times more intense is the sound of normal conversation if it has an intensity rating of 60-dB?
5. The table at the right represents the decibel level for several sound sources. Use the table to make comparisons of the intensities of the following sounds.

Sound Source	Level (dB)
Smashing Pumpkins concert (front row)	110
Smashing Pumpkins concert (15 th row)	100
Average Factory	90
Normal Speech	60
Pingry library	40
Threshold of hearing	0

How many times more intense is the front row of a Smashin' Pumpkins concert than ...

- a. ... the 15th row of the same concert?
 - b. ... the average factory?
 - c. ... normal speech?
 - d. ... the GBS library after school?
 - e. ... the sound which most humans can just barely hear?
6. On a good night, the front row of the Twisted Sister concert would surely result in a 120 dB sound level. A Walkman produces 100 dB. How many Walkmen would be needed to produce the same intensity as the front row of the Twisted Sister concert?