

1. Assume that the speed of sound in air is 341 m/s, at 20°C, unless otherwise noted.
2. If a sound wave is traveling when the temperature is 20°C and has a wavelength of 2.45 m, what is the frequency of the sound?
3. How long is a wave that has a frequency of 440 Hz and is moving through sea water at 1530 m/s?
4. A particular note played on a trumpet has a frequency of 440 Hz. What is the frequency of the note that is one octave higher?
5. The sound a mosquito makes is produced when it beats its wings at the average frequency of 620 wing beats per second. What is the wavelength of the sound waves produced by the mosquito?

6. How many times **softer** is a 20 dB sound compared to one that is 50 dB?

7. How many times **louder** is a 45 dB sound compared to one that is 95 dB?

8. How many times **louder** is a 105 dB sound than one that is 102 dB?

9. How many times louder is a 60 dB sound than the threshold of hearing?

10. What decibel level measures a sound that is 1000 times **softer** than one that is 55 dB?

11. If one loudspeaker on stage plays music at 85 dB, what is the relative intensity of 100 identical speakers all playing at one time?

12. What decibel level measures a sound 1 trillion times **louder** than one that is 5 dB?

13. What decibel level is five thousand times softer than one that is 86 dB?