

A guardian dog rests its ears on the ground to better hear sounds, as sound travels faster through solids. Sound is heard from all directions because it spreads outwards in spheres from its source. Violinists adjust string length to alter the frequency (pitch) of the sound. Musical notes have uniform frequencies, unlike noise, which is non-uniform, making sounds like drills and loudspeakers uncomfortable. Construction workers wear silicon earplugs for noise protection. A 251 Hz tuning fork sounds rougher (lower pitch) than a 512 Hz one. Sound intensity decreases proportionally to the square of the distance; hence, front row seating is preferable. Sound intensity also decreases with decreasing amplitude of the vibrating source (as seen with a vibrating ruler), and is directly proportional to the square of the amplitude. Resonance boxes increase sound intensity by enlarging the vibrating surface area. Lutes use hollow wooden boxes for the same reason. Sound travels with greater intensity in denser mediums, like carbon dioxide compared to air. Finally, pianos and violins can sound different even with identical intensity and pitch due to differing harmonic tones accompanying the fundamental tone.