

Sound Waves Key Terms

On-level Physics

The following are the terms you should be familiar with in order to properly complete this unit. You are expected to be able to define each as well as apply these terms in any situation during this and subsequent units of study.

pitch - Term that refers to how high or low sound frequencies of sound appear to be

reverberation - The echoing effect produced by multiple reflections of sound.

resonance - Phenomenon that occurs when the frequency of forced vibrations on an object matches the object's natural frequency producing a dramatic increase in amplitude.

beats - An alternating loud-soft pattern heard due to the interference of sound waves of different frequency.

sound - Longitudinal waves caused by vibration of object. It is what you "hear".

intensity/loudness/volume - The amount of energy in each wave; perceived as how loud a sound is. For sound waves: measured in decibels (dB).

decibel – the unit of sound wave intensity; a non-linear logarithmic unit. Every 10 decibels is a power of 10 change in intensity.

forced vibration – the vibration of one object due to the vibration of another nearby vibrating object.

reflection - Occurs when a wave strikes an object and bounces off.

diffraction - The bending of a wave around a barrier or through a narrow slit.

Doppler effect - The observed increase or decrease in wave frequency, caused by motion of the sound source or receiver relative to each other. If moving towards each other a higher frequency is observed.

sound quality – the distinct and unique property of the sound produced by an object due to the relative intensities of various overtones. This is why a flute and violin sound different even when playing the same fundamental frequency.

oscillation - A repeating “to-and-fro” motion about an equilibrium position.

medium - The material (solid, liquid, gas, or a combination of these) through which a wave travels.

rarefaction - Part of a longitudinal wave in which the particles are spread apart.

compression - Part of a longitudinal wave in which the particles are close together.

amplitude - For a wave, the maximum displacement from the rest position of the medium. Proportional to the energy of a wave.

interference - The ability of two or more waves to combine and form a new wave. Constructive interference results in an increased amplitude, while destructive interference results in a decreased amplitude.

rest position - the natural orientation of the medium without the effects of a wave disturbance. For example, a pond may be perfectly flat and still. This is its rest position and it will return to this position after a wave completes its disturbance.

longitudinal (compressional) wave - a wave in which the medium is displaced parallel to the direction of travel of the wave itself. An accordion being played would be an example. This type of wave is described in appearance by its compressions (high density of medium) and rarefactions (low density of medium).

wavelength (λ) - the distance between two consecutive crests or troughs, or any other similar points on a wave.

frequency (f) - the number of waves passing a fixed point in a given time. Usually written as waves per second or Hertz (Hz). The inverse of the period.

period (T) - the time required for one complete wave (crest to crest) to pass a fixed point. The inverse of the frequency.

vibration - an oscillation of a material due to a force applied.

natural frequency - a frequency at which an object, once energized, will vibrate.