**Vocabulary: Doppler Shift**



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* Doppler shift – the apparent change in the wavelength and frequency of sound waves that is caused by the movement of the sound source, observer, or both.
* Frequency – the number of times something happens in a given period of time.
	+ The frequency of a sound wave is equal to the number of waves that pass a point each second.
	+ The unit of frequency is the *hertz* (Hz). One hertz is one event per second.
	+ The shorter the *wavelength* of a wave is, the greater its frequency. Longer wavelengths correspond to lower frequencies.
* Pitch – the perceived frequency of a sound.
	+ Shrill sounds like sirens or smoke alarms are high in pitch and high in frequency.
	+ The deep sounds made by foghorns and tubas are low in pitch and frequency.
* Sonic boom – a loud noise produced by a source moving faster than the speed of sound (343 m/s at sea level with a temperature of 20 °C or 68 °F).
	+ Just as a ship leaves a visible wake in the water behind it, a supersonic jet leaves behind an invisible “wake” of compressed sound waves.
	+ An observer will hear the sonic boom *after* the jet flies by.
* Sound waves – vibrations transmitted through an elastic medium such as a gas, liquid, or solid.
	+ Sound causes air molecules to vibrate back and forth in the same direction that the sound is moving. This creates the alternating high- and low-pressure areas (*compressions* and *rarefactions*) shown below.



* + Sound waves cause our eardrums to vibrate. The vibrations are transmitted to the auditory nerves via a series of delicate structures in the inner ear.



* Wavelength – the distance between consecutive compressions of a wave.
	+ Wavelength could also be the distance between consecutive rarefactions of a wave.
	+ The wavelength of a transverse wave is the distance between consecutive crests or troughs.