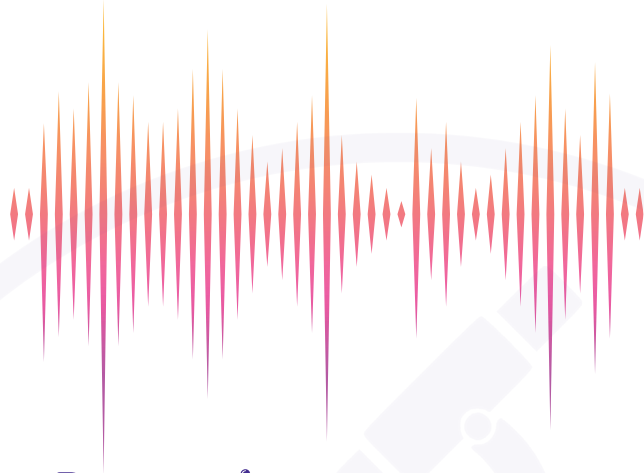


# SOUND AND WAVES

## Key Concepts

- Sound is caused by vibrations and travels as a wave.
- Waves transfer energy from one place to another.



## Key Facts to Remember

- Sound waves are longitudinal waves, where particles vibrate parallel to the wave direction.
- Sound cannot travel through a vacuum; it needs a medium like air, water, or solids.
- The speed of sound in air is about 343 m/s.
- Pitch depends on the frequency of the sound wave; high frequency = high pitch.
- Loudness depends on the wave's amplitude; larger amplitude = louder sound.
- Echoes are sound waves reflected off surfaces.
- Humans hear frequencies between 20 Hz and 20,000 Hz.
- Ultrasound is sound with frequencies above 20,000 Hz, used in medical imaging.

## Quick Questions

1. What causes sound?
2. Name the type of wave sound travels as.
3. Can sound travel through a vacuum?
4. What determines the pitch of a sound?
5. What affects the loudness of a sound?
6. What is the speed of sound in air?
7. What range of frequencies can humans hear?
8. What is ultrasound used for?

## Fun Fact

**The loudest sound recorded on Earth was the eruption of Krakatoa in 1883— it was heard 3,000 miles away!**