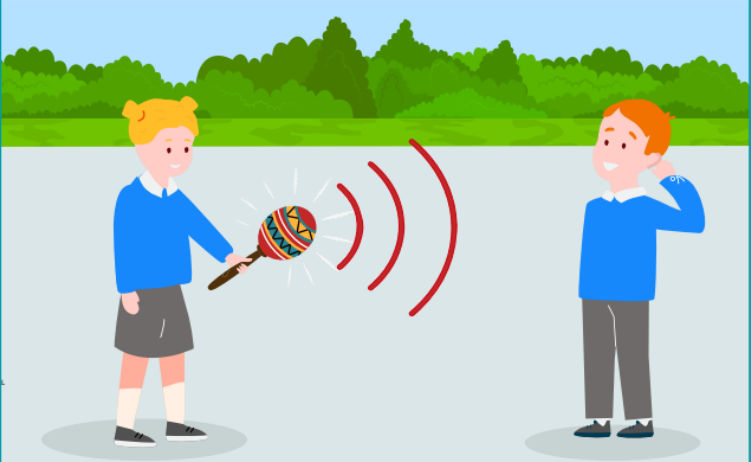


Y4 Science: Energy – Sound and Vibrations

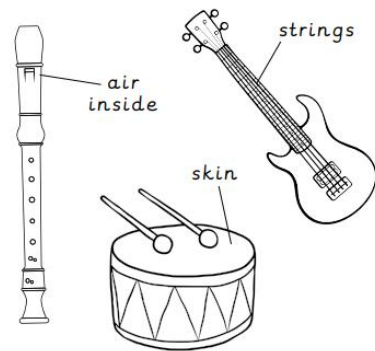
Sound is made by **vibrations**. When something vibrates, it moves the air around it, creating a **sound wave**. Sound waves can travel through different mediums (solids, liquids and gases) to our **ears**, allowing us to hear sounds.



Sound waves travel fastest and farthest through solids, then liquids and slowest through gases.

Materials that do not let sounds pass through quickly are called **insulators** and can be used to muffle loud sounds.

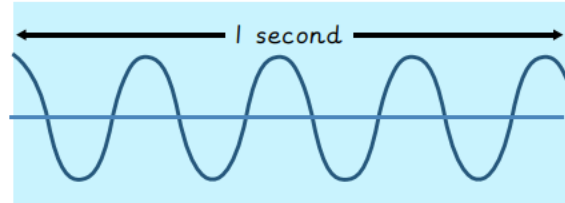
Different **musical instruments** make vibrations in different ways:



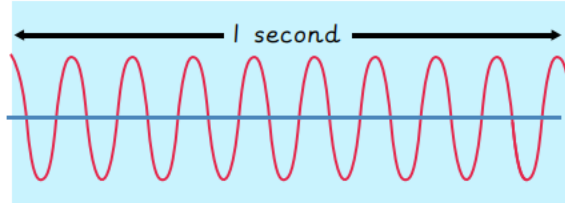
The volume of an instrument can be changed, for example by plucking, blowing or hitting harder.

The pitch of some instruments can be changed, for example by pressing a different key or plucking a different string.

slower waves = lower pitch sound



faster waves = higher pitch sound



The **pitch** of a sound depends on the speed of the vibrations.

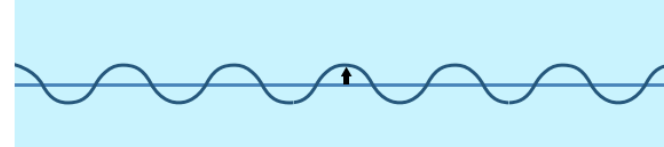
Pitch can be measured in **hertz (Hz)**. High-pitched sounds can be dangerous to the ear and cause hearing loss.

The **volume** of a sound depends on the strength of the vibrations.

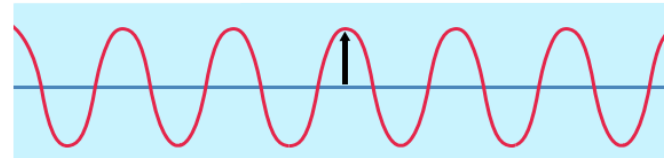
The volume of a sound decreases as the **distance** from the source increases.

Volume can be measured in **decibels (dB)** using a decibel meter. Sounds above 80 dB can be dangerous to the ear and cause hearing loss. **Ear protectors** can be worn to muffle loud sounds.

weaker vibrations = smaller waves = quieter sounds



stronger vibrations = bigger waves = louder sounds



Key Vocabulary

Air – a mixture of gases that surround the earth.

Insulator of sound – a material that does not let sound pass through quickly.

Bar chart – a graph to show grouped data using different length bars.

Eardrum – a thin tightly stretched piece of skin inside the ear that vibrates when sound waves hit it.

Pitch – how high or low a sound is.

Proof – results of information that shows something is true.

Vibration – moving back and forth quickly.

Sound - something that is heard when things vibrate and the vibrations travel to the ears.

Volume – how loud or quiet a sound is.

Sound proofing - using an insulating material to muffle sound.

High pitch – a sound caused by quick vibrations.

Low pitch - a sound caused by slow vibrations.

Research – looking for information about a scientific question.

Musical instrument – Something that makes sounds (often by blowing, hitting or humming) and is used to create movement