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Playlist

Sound

Sounds are how we communicate, from babies crying for attention to children and adults talking. Sounds are made when an object vibrates. The vibrations travel through the air as sound waves until they reach our ears. Sounds are made by living things, such as animals and people, and objects, such as musical instruments.

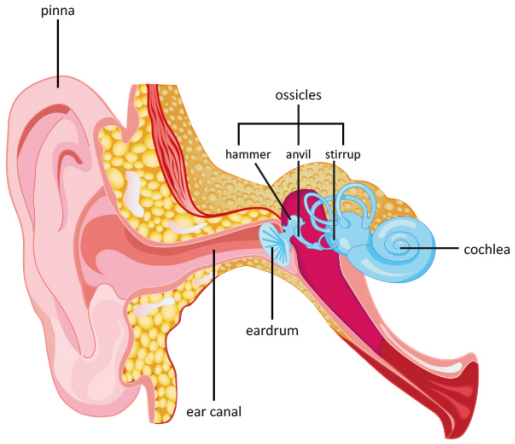
Measuring sound

The volume of a sound is measured in decibels (dB). Whispering is a very quiet sound, at about 30 dB, and shouting is a very loud sound, at about 110 dB. If humans listen to a sound that is over 85 dB for a long period, it can damage their hearing.

Sound level (dB)	Example
10	pin dropping
30	whispering
60	speaking
75	toilet flushing
90	lawn mowing
110	rock band playing
120	thunder rumbling
180	rocket launching

Human ear

The ear is an organ that allows us to hear. The pinna is the only part of the ear that is outside the head and it has a special shape to funnel sound into the ear canal.



How we hear

When an object vibrates, it causes vibrations in the air around it. These vibrations, called sound waves, travel through the air to the ear. The sound waves then travel through the ear canal to the eardrum. The eardrum vibrates, sending the vibrations to three tiny bones inside the ear. These bones are the hammer, anvil, and stirrup, together called the ossicles. The ossicles are joined and allow vibrations to travel to the cochlea. The cochlea is a spiral-shaped tube that turns vibrations from the ossicles into electrical signals that the brain can understand. Sound waves can also travel to the ear through liquids such as water, and solids, such as glass.

Pitch and volume

The pitch of a sound is how high or low it is. An example of a high-pitched sound is a whistle, and a low-pitched sound is the rumble of a heavy lorry. Pitch depends on how quickly or slowly the object vibrates. When an object vibrates quickly, high-pitched sounds are created, and when an object vibrates slowly, a low-pitched sound is created. The volume of a sound is how loud or quiet it is. Volume depends on the strength of the vibration. Stronger vibrations produce louder sounds and weaker vibrations produce quieter sounds.

Soundproofing

Some sounds can be unpleasant or distracting, so soft materials called insulators are sometimes used to reduce the sound waves reaching people's ears. This is called soundproofing. Materials such as carpet, polystyrene and foam are used for soundproofing because they absorb and reduce sound waves.

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Musical instruments

String instruments

String instruments make sounds by vibrating strings. They are played by plucking the strings, like a guitar, or using a bow, like a violin. Different notes are made by changing the thickness, tightness and material of the strings, for example, thin and tight strings produce higher notes.

violin

Woodwind instruments

In wind instruments, like the flute and clarinet, vibrating air makes the sound. Blowing across the hole in a flute makes sound waves travel down the tube. The pitch is changed by pressing keys to open or close holes, making the different notes.

flute

Brass instruments

In brass instruments, such as the trumpet and French horn, it is the vibrations made between the lips and mouthpiece that cause the air down the brass tube to vibrate. By pressing valves, the tube can be made longer or shorter, making different sounds.

French horn

Keyboard instruments

Instruments with a keyboard make sounds by pressing a key that causes a string inside the instrument to be hit, like a piano, or plucked, like a harpsichord. The strings vibrate when they are struck, making sound waves.

piano

Singing

Singing is making musical sounds with the voice. Singing is part of every culture in the world.

Pop

Pop music started in the United States and United Kingdom in the 1950s. It is a type of music that appeals particularly to teenagers and younger adults. There is often a clear rhythm, catchy tune and theme of love and romantic relationships.

Jazz

Jazz music came from the southern United States but is rooted in music from Africa and Europe. It uses a variety of instruments, including the trumpet, saxophone, piano and drums. It uses improvisation, where music and words can be made up during the song.

Opera

Opera music is usually sung in a different style to other forms of singing. To project their voices, opera singers use a musical technique called vibrato, where there is a slight, repeated shaking on the musical note to give a fuller sound.

Country

Country music came from the southern United States. It often tells a story accompanied by string instruments, such as banjos, guitars and violins.

Taylor Swift is a pop and country music singer

Glossary

absorb	To take in or reduce the effect.
cochlea	A hollow, coiled tube inside the inner ear that contains nerves to help carry information about sound to the brain.
decibel (dB)	A unit for measuring the loudness of a sound.
ear canal	The tube that connects the outer and middle ear.
eardrum	A piece of tightly stretched skin inside the ear that vibrates in response to sound waves.
instrument	A device used to make music.
insulator	A material used to stop sound, heat or electricity from passing through it.
ossicles	Three small bones in the middle ear.
outer ear	The part of the ear, which includes the pinna and the ear canal, that collects sound waves and directs them towards the eardrum.
pinna	The visible part of the outer ear that is outside the head and acts as a funnel, directing sounds down the ear canal.
pitch	The measure of how high or low a sound is.
soundproof	Designed to prevent the passage of sound.
vibration	A quick, back and forth movement.
volume	The measure of how loud or quiet a sound is.

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