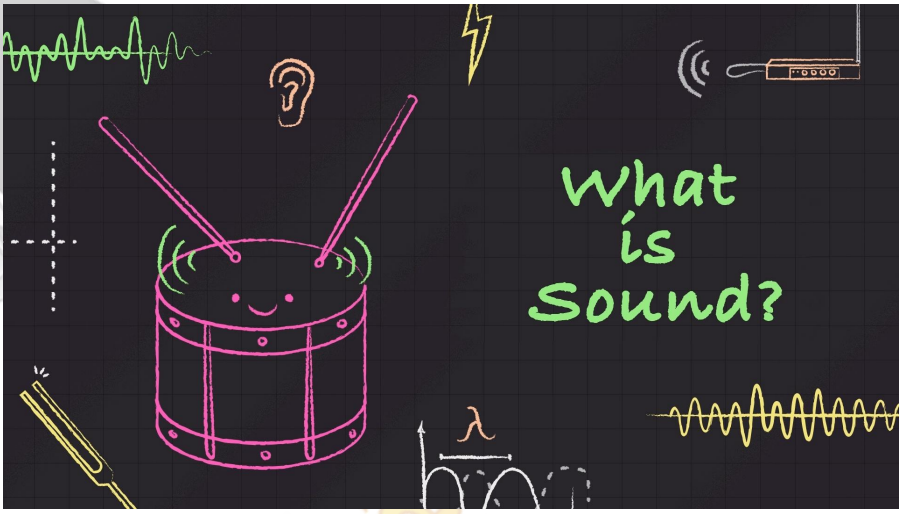
A4. What Is Sound?

What Is Sound?

Have you ever wondered how you can hear your favorite song or your friend's voice? The answer lies in the fascinating world of sound. Sound is all around us, and it allows us to communicate, enjoy music, and experience the world in a unique way.



What Is Sound?
Sound is a type of energy that travels in waves. It is produced when something vibrates or moves back and forth. These vibrations create waves that travel through the air or other materials, like water or metal.

How Does Sound Travel?
When you speak or play a musical instrument, the vibrations from your voice or the instrument's strings create sound waves. These waves travel through the air and enter your ears. Inside your ears, there are tiny parts called the eardrum and the inner ear that pick up the sound waves and turn them into signals that your brain can understand.

Speed of Sound
Sound travels very fast! In the air, sound waves move at about 343 meters per second (767 miles per hour). This means that you can hear sound almost instantly after it's produced, especially if it's nearby.

How Loud or Soft Is Sound?
The loudness of sound is called its volume. When something vibrates strongly, it produces loud sounds, while weak vibrations create soft sounds. Volume is measured in units called decibels (dB). For example, a normal conversation is about 60 dB, and a jet engine is around 140 dB, which is very loud.

Pitch of Sound

The pitch of sound is how high or low the sound is. When something vibrates quickly, it produces high-pitched sounds. When it vibrates slowly, it creates low-pitched sounds. For example, a whistle produces a high-pitched sound, while a big drum makes a low-pitched sound.

How Sound Changes

When sound waves travel through different materials, they can change. For instance, sound travels faster through water than through air, which is why sounds can be heard more clearly underwater. Sound can also bounce off surfaces, like walls or floors, creating echoes.

Uses of Sound

Sound is essential for communication. We use our voices to talk, and we also use telephones and radios to transmit sound over long distances. Sound is also used in music and entertainment, as well as in sonar systems to navigate and find objects underwater.

1. What is sound?
    A) A type of energy that travels in waves
    B) A type of light that travels in waves
    C) A type of liquid that travels in waves
    D) A type of solid that travels in waves

2. How is sound produced?
    A) When something becomes cold
    B) When something expands in size
    C) When something vibrates or moves back and forth
    D) When something becomes heavy

3. What allows us to hear sound?
    A) Our eyes
    B) Our nose
    C) Our ears
    D) Our hands

4. How fast does sound travel in the air?
    A) 100 meters per second
    B) 200 meters per second
    C) 343 meters per second
    D) 500 meters per second

5. What is the loudness of sound called?
    A) Volume
    B) Pitch
    C) Frequency
    D) Speed

6. What unit is used to measure volume?

A) Watts
B) Decibels
C) Hertz
D) Amperes

7. What produces high-pitched sounds?
    A) Strong vibrations
    B) Weak vibrations
    C) Slow vibrations
    D) No vibrations

8. How do sound waves change when they travel through water?
    A) They slow down
    B) They speed up
    C) They disappear
    D) They become louder

9. What is an echo?
    A) A type of music
    B) A loud sound
    C) A repeating sound caused by sound waves bouncing off surfaces
    D) A soft sound

10. How is sound used in sonar systems?
    A) To make music
    B) To navigate and find objects underwater
    C) To create echoes in buildings
    D) To communicate with friends

ANSWERS & EXPLANATIONS

1. A - A type of energy that travels in waves.
    - Sound is a type of energy that travels in waves through the air or other materials.

2. C - When something vibrates or moves back and forth.
    - Sound is produced when something vibrates or moves back and forth, creating waves that travel through the air.

3. C - Our ears.
    - Our ears pick up sound waves and turn them into signals that our brain can understand, allowing us to hear sounds.

4. C - 343 meters per second.
    - Sound travels at about 343 meters per second (767 miles per hour) in the air.

5. A - Volume.
    - The loudness of sound is called its volume.

6. B - Decibels.
    - Volume is measured in units called decibels (dB).

7. A - Strong vibrations.
    - High-pitched sounds are produced by strong vibrations.

8. A - They slow down.
    - Sound waves slow down when they travel through water.

9. C - A repeating sound caused by sound waves bouncing off surfaces.
    - An echo is a repeating sound caused by sound waves bouncing off surfaces like walls or floors.

10. B - To navigate and find objects underwater.
    - Sonar systems use sound waves to navigate and find objects underwater, similar to how bats use echolocation.