Sound Waves Quiz Answer Key PDF

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What unit is used to measure the frequency of sound waves?

A. Decibels
B. Meters
C. Hertz ✓
D. Joules

What is the role of resonance in musical instruments? Provide an example.

The role of resonance in musical instruments is to amplify sound and enrich tonal quality by enhancing specific frequencies. An example is a guitar, where the body resonates with the vibrating strings to produce a fuller sound.

Discuss the differences between constructive and destructive interference of sound waves.

Constructively, sound waves combine to increase amplitude, resulting in louder sound, whereas destructively, they cancel each other out, leading to reduced or no sound.

Explain how ultrasound technology uses sound waves for medical imaging.

Ultrasound technology works by emitting sound waves from a transducer into the body, which then reflect off tissues and organs. These echoes are captured and converted into visual images, enabling healthcare providers to assess and diagnose various medical conditions.

Which property of sound waves is related to their loudness?

A. Frequency
B. Wavelength
C. Amplitude ✓

D. Speed

What is the typical range of human hearing?

A. 0 Hz to 10 kHz
B. 20 Hz to 20 kHz ✓
C. 50 Hz to 50 kHz
D. 100 Hz to 100 kHz

What happens to sound waves during reflection?

A. They bend
B. They bounce back ✓
C. They spread out
D. They are absorbed

In which medium does sound travel the fastest?

A. Air
B. Water
C. Vacuum
D. Steel ✓

Which phenomenon occurs when sound waves bend as they pass through different media?

A. Reflection
B. Refraction ✓
C. Diffraction
D. Absorption

Describe the process of sound wave reflection and provide an example of where this might occur in everyday life.

Sound wave reflection is the process where sound waves hit a surface and bounce back. An example of this is when you shout in a canyon and hear an echo.

How does temperature affect the speed of sound in air?

As temperature increases, the speed of sound in air increases.

Explain how the amplitude of a sound wave affects its perceived loudness.

The amplitude of a sound wave affects its perceived loudness because greater amplitude corresponds to a higher intensity of sound energy, making the sound louder to the human ear.

Which factors affect the speed of sound in a medium? (Select all that apply)

A. Temperature ✓
B. Density ✓
C. Humidity ✓
D. Color

Which of the following are characteristics of sound waves? (Select all that apply)

A. Frequency ✓
B. Amplitude ✓
C. Color
D. Wavelength ✓

What is the term for unwanted or harmful outdoor sound?

A. Echo
B. Noise pollution ✓
C. ResonANCE
D. Interference

What are the uses of sound waves in technology? (Select all that apply)

A. Sonar ✓
B. Ultrasound ✓
C. X-ray

D. MRI

What are the components of sound wave propagation? (Select all that apply)

A. Medium ✓
B. Source ✓
C. Receiver ✓
D. Light

What can happen when sound waves interfere with each other? (Select all that apply)

A. ConstructIVE interference ✓
B. Destructive interference ✓
C. Amplification ✓
D. Reflection

Which of the following are effects of noise pollution? (Select all that apply)

A. Hearing loss ✓
B. Stress ✓
C. Improved concentration
D. Sleep disturbances ✓

What type of wave is a sound wave?

A. Transverse
B. Longitudinal ✓
C. Electromagnetic
D. Gravitational