



Main Ideas, Key Points, Questions:

After watching the video segment, write down key points, main ideas, and big questions.



Objective(s):

- *Understand why sound waves are classified as mechanical and longitudinal.*
- *Recognize how the speed of sound waves changes based on the medium and temperature through which they travel.*
- *Learn how the human ear interprets the frequency and amplitude of sound waves.*



Notes:

During the video segment, use words, phrases, or drawings to take notes.



Summary:

After watching the video segment, write at least three sentences explaining what you learned. You may ask yourself: "If I was going to explain this to someone else, what would I say?"

Answer the following.

1. Is a sound wave mechanical or electromagnetic?

A sound wave is mechanical because it requires a medium through which to travel.

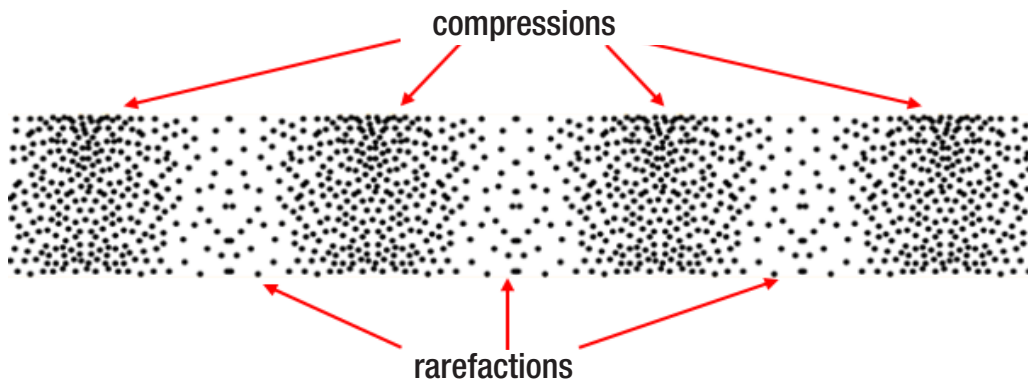
2. Is a sound wave transverse or longitudinal?

A sound wave is longitudinal.

3. Which part of the ear receives sound waves and turns them into electrical energy that travels to your brain?

The cochlea receives sound waves and converts them into electrical energy that your brain can interpret.

4. Label a compression region and a rarefaction region on the diagram below:



5. If the speed of sound is constant, what happens to the wavelength of sound waves when their frequency increases?

If wave speed remains constant, wavelength decreases when frequency increases.

6. How does the speed of sound change as it travels through different states of matter? Rank solids, liquids, and gases in order from fastest to slowest.

solids > liquids > gases

7. Why do sound waves travel faster through certain states of matter than others?

Sound waves travel by contact between particles, so sounds travel faster through denser materials.

questions continued on next page

Unit 6B_Notes and Questions TEACHER

Answer the following.

8. What is the equation that relates the speed of sound through air to air temperature?

$$v_{\text{sound}} = 331 \text{ m/s} + (0.6 \text{ m/s}^\circ\text{C}) T$$

9. When is a sonic boom created?

A sonic boom is created when an object moves faster than the speed of sound.

10. The frequency of a sound wave is interpreted as the pitch of the sound.

11. What is the normal range of human hearing?

20 Hz – 20,000 Hz

12. What property of a sound wave is related to loudness?

The amplitude of a sound wave is related to loudness.
