

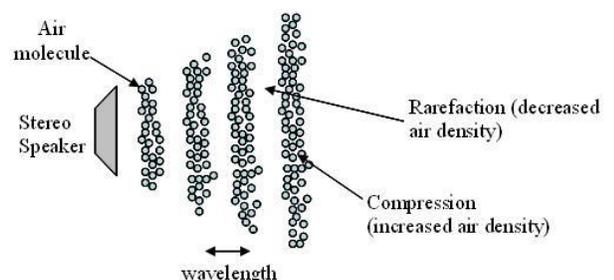
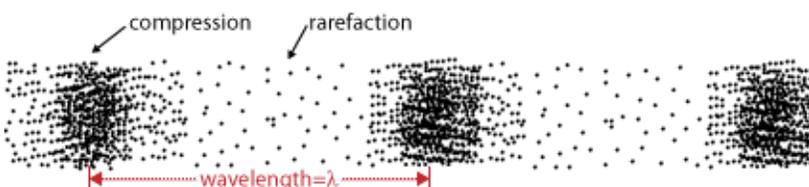
# SOUND – CHAPTER 18–SECTION 1 QUESTIONS

Read pages 643-649 in the red textbook. Answer the following questions in **COMPLETE SENTENCES**.

You are welcome to type and print your answers.



1. What is sound?
2. What two things are necessary for sound to occur?
3. Sound always travels through mediums (matter) as a longitudinal (compression) wave (never as a transverse wave)! Draw a sound wave traveling through air. Label the following 5 things on your drawing: compressions, rarefactions, wavelength, the direction the energy is moving, the direction the molecules are moving.
4. Sometimes scientists like to convert longitudinal sound waves found in nature to a transverse wave (only seen on a man-made instrument). In order to do this, they have to have an instrument that will collect the longitudinal sound wave. The instrument then shows what that longitudinal wave looks like as a transverse wave. What instrument is required to convert sound waves into transverse images?
5. Name two ways sound waves differ from light waves.
6. Draw a picture which shows how light travels.
7. Do the particles of matter or the medium move along with the energy as sound travels? Explain your answer.
8. How does the energy move through the sound wave? Draw a picture to illustrate this concept.
9. Name 3 mediums that sound can travel through.
10. Explain a situation when sound does NOT travel or occur.
11. Does sound always travel at the same speed?
12. Make a bar graph which shows the speed at which sound travels through the 8 mediums listed in the table on page 647. Make sure you use graph paper, the graph has a title, a key, and the x and y axis are labeled. Each square must be equal value on the y axis!
13. Look at your graph. In most cases, sound travels fastest in which phase of matter?
14. In general, about how many times faster does sound travel in solids compared to liquids?
15. In general, about how many times faster does sound travel in solids compared to air?
16. About how many times faster does sound travel in water compared to air?
17. Explain why sound travels faster in solids compared to gases.
18. Explain why ATT and other “cable” companies have switched to using fiber optic cables (glass) to transmit sound and digital data into your home for your televisions and computers.
19. Does sound travel faster through warm air or cold air? Explain your answer.
20. The speed at which sound travels depends on what three things?
21. Look at the graph on page 647. According to the graph, what happens to the speed of sound as the temperature increases?
22. Explain why a change in air temperature would affect the speed at which sound travels.
23. What is elasticity?
24. Why do you think sound travels faster in mediums that are high in elasticity?
25. Chuck Yeager was the first person to break the sound barrier which created a sonic boom. Explain why he picked a cold day to attempt this feat.



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