

Guided Reading Chapter 24 Section 3

1. Sound moves through a \_\_\_\_\_ or \_\_\_\_\_ material when the atoms within the material push against each other, transferring the energy from one particle to the next.
2. Sketch the picture of the atoms in a sound wave, showing areas of higher and lower pressure.
3. The perception of high or low sounds is called \_\_\_\_\_.
4. What frequency range can humans hear?
5. The \_\_\_\_\_ is a measurement unit for intensity of sound.  
a) meter                                      b) decibel                                      c) degree
6. Complete the chart showing decibels and amplitude.

<b>Decibel</b>	<b>Amplitude</b>
0	1
20	
	100
60	
	10000
120	1,000,000

7. On the decibel scale, a “quiet whisper 1 meter away” is about \_\_\_\_\_ decibels, where a “jackhammer 3 meters away” is \_\_\_\_\_ decibels.  
a) 20, 100                                      b) 10, 100                                      c) 10-15, 90
8. \_\_\_\_\_ is the science and technology of sound.
9. The speed of sound is \_\_\_\_\_ miles/hr, which is slower than the speed of light at \_\_\_\_\_ miles/sec.

10. What does it mean when we say something is “supersonic?”
11. What is a sonic boom?
12. How fast does sound travel through different materials?
13. How do temperature and pressure affect sound waves?
14. Why do you sound funny after you inhale helium gas?
15. Look at Figure 24.24 and complete this phrase, “As wavelength increases, frequency \_\_\_\_\_.”
16. A \_\_\_\_\_ wave is one that is confined in a space.
17. Harmonics are made when a standing wave is vibrated. The lowest natural frequency is called the \_\_\_\_\_.
18. Label the nodes and the antinodes in the picture.



19. Label a full wavelength on the picture.



20. Use the word bank to complete the paragraph explaining how we hear. You might have to do a bit of research.

channel  
stirrup  
eardrum  
ear canal

anvil  
spiral channel  
hammer  
lower

hairs  
cochlea (2)  
nerves

We hear when sound enters the \_\_\_\_\_ . The sound then moves to the \_\_\_\_\_ and causes it to vibrate. Three delicate bones, the \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_ transfer the vibrations to the \_\_\_\_\_. The fluid in the \_\_\_\_\_ of the \_\_\_\_\_ vibrates and creates waves. \_\_\_\_\_ along the channel respond and move tiny \_\_\_\_\_. \_\_\_\_\_ frequencies are heard at the wider opening of the channel, and higher frequencies are heard in the narrower part of the \_\_\_\_\_.

21. Draw two waves that are “in-phase” and two waves that are “out-of-phase.”

22. The Doppler effect is a shift in the \_\_\_\_\_ of an oscillation caused by the motion of the source of the oscillation, and occurs at speeds below the speed of sound.

a) amplitude

b) frequency

c) speed