Name: _____ _____/ 9

Chapter 20.2 Homework
Conceptual Physics Parent Signature: _____

Each numbered question is worth one point unless otherwise noted.

Reviewing Concepts

7. Explain how sound is caused at the molecular level. (1.5)

8. What type of waves are sound waves? (0.5)

10. Which of the following sounds has the shortest wavelength? (0.5) Explain. (0.5)
    a. the rumble of thunder at 20 Hz
    b. a bass guitar at 100 Hz
    c. A fire truck siren at 2,000 Hz
    d. the highest note on a piano at 5,000 Hz

11. If the temperature of a material increased, how would the speed of sound through this material be affected? Why?

12. In which space would it be easier to hear a musician and why—outdoors or in your classroom?

Solving Problems

2. The speed of sound through air is approximately 340 m/s. What is the wavelength of a sound wave with a frequency of 680 Hz?

3. The range of human hearing is between 20 Hz and 20,000 Hz. If the speed of sound is 340 m/s, what is the longest wavelength you can hear? What is the shortest?

4. Suppose you stand in front of a wall that is 170 m away. If you yell, how long does it take for the echo to get back to you if the speed of sound is 340 m/s?

5. What is the fundamental frequency of an organ pope that is 1 m long? The pipe has one end that is open and another end that is closed. Use a wave speed of 340 m/s.