Directions: Answer the following questions on the lines provided.

1. What is acoustics?

2. Why would reverberation be a problem when using a gym for a concert?

3. What would an acoustical engineer consider when designing a concert hall? How could reverberation be reduced?

4. Describe echolocation and tell how bats use it to locate food.

5. What is sonar?

6. Explain how ultrasound is used to produce images of internal structures in the body.

7. When is it better to use ultrasound and when is it better to use X rays for detecting medical problems?

8. Why might ultrasound be a treatment of choice over surgery for kidney stones?
1. **Testing Concepts**

   **Directions:** Determine whether the statements below are **true** or **false**. If a statement is false, change the underlined term to make it true.

   1. The speed of sound **depends** on the loudness of sound.
   2. As the frequency of a sound increases, the pitch becomes **higher**.
   3. Tiny hairs in the **eardrum** vibrate, sending nerve impulses through the auditory nerve.
   4. The **amplitude** of a sound wave depends on how tightly packed the sound molecules are.
   5. **Pitch** is the human perception of sound intensity.

   **Directions:** Circle the term in parentheses that makes each statement correct.

   6. (Intensity, Pitch) influences how far away a sound can be heard.
   7. Sound intensity is measured using the (hertz, decibel) scale.
   8. The (acoustic effect, Doppler effect) occurs when the source of a sound wave is moving relative to the listener.
   9. (Noise, Music) is made of sounds that are deliberately used in regular pattern.
   10. (Beats, Pitch) can occur when sound waves of different frequencies combine.
Key Terms
Sounds

Directions: Unscramble the words in italics to complete the sentences below. Write the terms on the lines provided.

1. The study of sound is known as staucsic.

2. Tiny hairs located in the hcleaco conduct sound to the brain.

3. The dmeraur passes sound vibrations to the hammer, anvil, and stirrup.

4. People’s perception of sound intensity is known as slunesdo.

5. When you hear a change in cptom, you are registering how high or low the sounds are.

6. The podpren ctefet lets you know that the source of a sound is moving toward or away from you.

7. When sounds and their reflections reach your ears at different times, you might hear an echoing effect called rberatveniroe.

8. A noserrato is a hollow chamber filled with air that amplifies sound when its air vibrates.

9. The use of underwater sound waves to detect objects is called rosan.

10. When sounds are deliberately used in a set pattern, simuc is created.

11. A vibration whose frequency is a multiple of the fundamental frequency is an onevoter.

12. A drum is an example of a reusponic instrument.

13. Sound intensity is measured in sceibled.

14. Every material has a natural queencyfr.
Directions: Identify each statement as true or false. If false, change the term in italics to make the statement true.

3. Sound is caused by an echo.

4. Ultrasound is used to break up kidney stones.

5. The bowl of a kettledrum that amplifies sound is called an echochamber.

6. Loudness is determined by the pitch of a sound.

7. As you move away from a warning siren, the pitch decreases.

8. Multiples of the fundamental frequency are called beats.

9. Music is sound without a set pattern.

10. Ultrasound is used to study body organs.

Directions: Use the diagrams to answer questions 11 and 12.

A. [Diagram]

B. [Diagram]

11. Which diagram shows the lowest pitch?

12. Which diagram shows the loudest sound?