

Chapter Test B

Sound

I. Testing Concepts

Directions: Match the description in the first column with the item in the second column by writing the correct letter in the space provided. Some items in the second column will not be used.

- | | | |
|----------|---|---------------------|
| <u>M</u> | 1. the part of the violin that amplifies the sound of the strings | a. eardrum |
| <u>D</u> | 2. the way the brain perceives the intensity of a sound. | b. cochlea |
| <u>P</u> | 3. the study of sound | c. intensity |
| <u>Q</u> | 4. finding objects by emitting sound waves and interpreting the reflected sound | d. loudness |
| <u>H</u> | 5. the change in pitch of a sound caused by motion of either the sound source or receiver | e. frequency |
| <u>R</u> | 6. used to locate objects under water by the reflection of sound waves. | f. pitch |
| <u>F</u> | 7. the highness or lowness of a sound | g. ultrasonic waves |
| <u>A</u> | 8. membrane that vibrates the bones of the middle ear | h. Doppler effect |
| <u>J</u> | 9. difference between sounds of the same frequency caused by overtones | i. noise |
| <u>C</u> | 10. amount of sound energy that flows through a given area in a given time | j. quality |
| <u>O</u> | 11. unpleasant echo effect caused by many sound reflections | k. music |
| <u>G</u> | 12. sounds with frequencies above 20,000 Hz | l. overtones |
| <u>L</u> | 13. multiples of the fundamental frequency | m. resonator |
| <u>K</u> | 14. a combination of sounds and distinct pitches following a specified pattern | n. echo |
| <u>B</u> | 15. fluid-filled structure of the inner ear that contains hair cells | o. reverberation |
| | | p. acoustics |
| | | q. echolocation |
| | | r. sonar |

II. Understanding Concepts

Skill: Recognizing Cause and Effect

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

- An increase in temperature will (increase, decrease, not affect) the speed of a sound wave.
- Increasing the frequency of a sound wave will change the (loudness, intensity, pitch) of a sound.
- The pitch of the siren on a rapidly approaching fire truck will (increase, decrease, remain the same).

Chapter Test B (continued)

4. Objects can be detected underwater by using sound waves in the (infrasonic, ultrasonic, Doppler) range.

Skill: Comparing and Contrasting

5. Compare and contrast noise and music.

Noise is random
music has regular patterns and
pitches

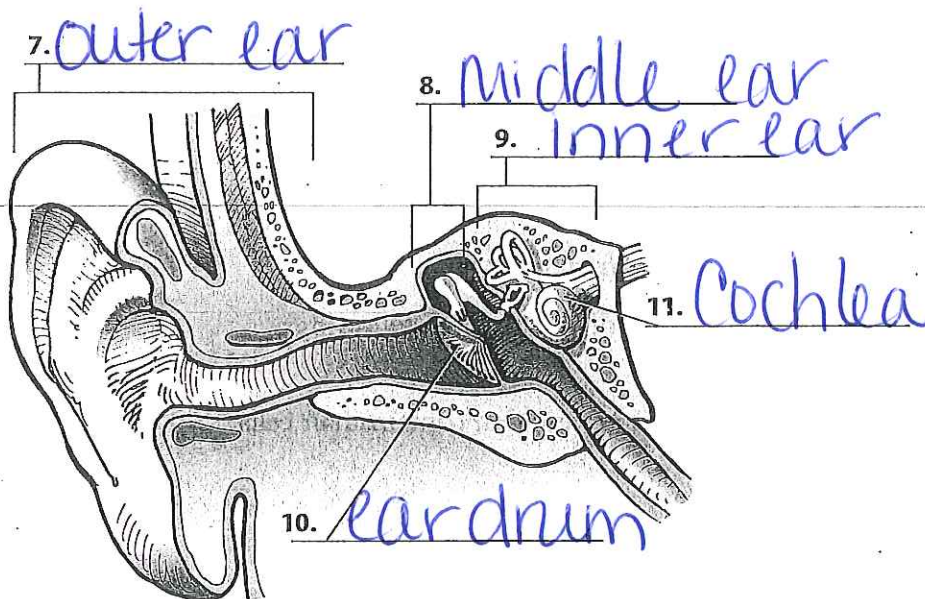
Skill: Sequencing

6. Using the numbers 1–4, put these stages of hearing in the correct order.

- 3 a. The amplified waves are converted to nerve impulses that travel to the brain.
2 b. The ear amplifies the waves.
1 c. The ear gathers compressional waves.
4 d. The brain decodes and interprets the nerve impulses.

Skill: Using Diagrams

Directions: Identify the parts of the ear indicated in the diagram.



Chapter Test B (continued)

III. Applying Concepts

Directions: Match the materials in the first column with the speeds of sound within those materials at 0°C in the second column by writing the correct letter in the space provided.

- | | | |
|----------|----------|--------------|
| <u>C</u> | 1. bone | a. 330 m/s |
| <u>A</u> | 2. air | b. 1,400 m/s |
| <u>B</u> | 3. water | c. 4,000 m/s |

Directions: Answer the following questions on the lines provided.

4. If the amplitude of a sound wave decreases, what happens to its loudness, intensity, pitch, and speed?

Loudness/Intensity \downarrow , pitch/speed Constant

5. A train is blowing its whistle as it is approaching you at a crossing. What happens to the whistle's intensity, speed, frequency, and wavelength?

Intensity/speed constant, freq \uparrow , wavelength \downarrow

6. In a science fiction movie, a nearby spaceship explodes and you hear the explosion on your ship. Is this realistic? Why or why not?

Not realistic, Sound waves need medium, little to no matter in space

Directions: Use the following diagrams to answer questions 8 through 10.

7. Which diagram represents a loud sound?

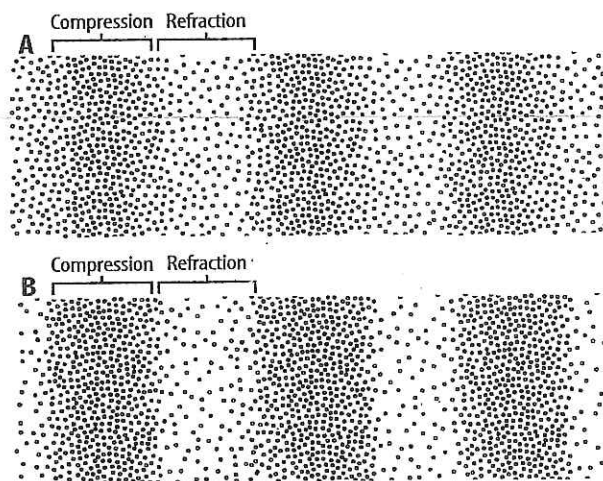
B

8. Which diagram represents a soft sound?

A

9. Explain your answers to questions 7 and 8.

B molecules are more compressed



Chapter Test B (continued)

IV. Writing Skills

Directions: Answer the following questions using complete sentences.

1. Suppose your class invites a person to give a speech in the gym of your school. When you test the sound system, you find that there are too many echoes. What might you do?

You need to cut down on the sound reflections. Cover wall w/ fabric and carpet on the floor.

2. A piano and a violin playing a note at the same frequency and loudness sound very different. Explain.

Qualities of sounds are different. Playing the same frequencies, each instrument has different patterns of overtones.

3. How can a bat use echolocation and the Doppler effect to tell whether an insect it detects is approaching or moving away?

Insect fly toward bat would return an echo of ↑ frequency. Insect flying away would return an echo of lower frequency.

4. If someone you knew had gallstones, what treatment might you recommend?

treatment w/ ultrasound
less invasive and recovery is faster.