

**Note-taking
Worksheet****Sound****Section 1 The Nature of Sound**

- A. All sounds are caused by something that _____.
- _____—formed when a vibrating object collides with air molecules, transferring energy to them
 - Compressional waves have two regions, called compressions and _____, which push air molecules together and then spread them apart.
- B. _____—the type of matter, whether liquid, solid, or gas; that sound waves travel through
- A sound wave's _____ depends on the substance of the medium and whether the medium is solid, liquid, or gas.
 - Sound travels more _____ through solids and liquids because the individual molecules are closer together than the molecules in gas.
 - As a medium's _____ increases, its molecules move faster and it conducts sound waves faster.
- C. Human hearing—_____ stages
- The outer ear gathers sound waves, passing them through the ear canal to a tough membrane called the _____
 - The vibrating eardrum passes the sound to three tiny bones in the middle ear—the _____, _____, and _____—which amplify the sound wave.
 - The stirrup vibrates and transfers the sound to a membrane in the oval window, then on to the inner ear's _____, a spiral-shaped structure that contains hair cells.
 - As the hair cells in the cochlea vibrate, nerve impulses are sent through the _____ nerve to the brain.

Section 2 Properties of Sound

- A. The amount of energy a wave carries corresponds to its _____, which is related to the density of the particles in the compressions and rarefactions.
- _____—the amount of energy that flows through a certain area in a specific amount of time
 - _____—human perception of sound intensity
 - Each unit on a scale that measures sound intensity is a _____.

Note-taking Worksheet (continued)

- B. _____—how low or high a sound seems to be
- _____ is the number of compressions or rarefactions of a sound wave that pass per second; human ears can hear frequencies from about 20 to 20,000 Hz.
 - _____ waves are sound frequencies over 20,000 Hz that have medical and scientific uses.
 - Infrasonic or _____ waves with frequencies below 20 Hz usually can't be heard but may feel like a rumble.
- C. _____—change in pitch or wave frequency due to a moving; either the source of the wave or the observer can be moving

Section 3 Music

- A. _____—sounds that are deliberately used in a regular pattern
- _____—frequency at which the a material vibrates
 - _____—the ability of a medium to vibrate by absorbing energy at its own natural frequency
- B. Sound _____—the differences among sounds of the same pitch and loudness
- _____—the main tone played and heard
 - _____—vibration with a frequency that is a multiple of the fundamental frequency
- C. Musical instruments—_____ used to make musical sounds
- _____—instruments in which sound is produced by plucking, striking, or drawing a bow across tightly stretched strings
 - Brass and woodwinds—air vibration in a _____, or hollow chamber that amplifies sound, with the pitch determined by the length of the vibrating tube of air
 - _____ instruments produce sound by being struck, shaken, rubbed, or brushed.
- D. _____—a pulsing vibration in loudness

Section 4 Using Sound

- A. Uses of sound—_____, warning signals, information
- B. _____—study of sound, which can prevent excessive reverberation and create good listening environments
- C. _____—process of locating objects by sending out sounds and interpreting the waves reflected back

Note-taking Worksheet (continued)

- D. _____—a system that uses the reflection of underwater sound waves to locate objects
- E. _____ waves are used in medicine to diagnose, monitor, and treat many conditions.
1. Can produce images of _____ structures for detection of medical problems
 2. Can _____ certain medical problems such as kidney stones or gallstones