

Sound ▪ Section Summary

How You Hear Sound

Key Concepts

- What is the function of each section of the ear?
- What causes hearing loss?

The function of your ear is to gather sound waves and send information about sound to your brain. Your ear has three main sections: the outer ear, the middle ear, and the inner ear. **The outer ear funnels sound waves, the middle ear transmits the waves inward, and the inner ear converts the sound waves into a form your brain can understand.**

The outermost part of your ear looks and acts like a funnel. It collects sound waves and directs them into a narrow region called the **ear canal**. Your ear canal is a few centimeters long and ends at the eardrum. The **eardrum** is a small, tightly stretched, drumlike membrane. The sound waves make your eardrum vibrate, just as a drum vibrates when you strike it.

Behind the eardrum is the middle ear. The middle ear contains the three smallest bones in the human body—the hammer, the anvil, and the stirrup. The hammer is attached to the eardrum. When the eardrum vibrates, the hammer does too. The hammer then sends vibrations to the anvil, which sends them to the stirrup.

The inner ear is separated from the middle ear by another membrane. Behind this membrane is a cavity filled with fluid. This cavity, the **cochlea**, is shaped like a snail shell. The cochlea is lined with over 10,000 tiny structures called hair cells. These hair cells have hairlike projections that float in the fluid in the cochlea. When the stirrup vibrates against the membrane, the vibrations move through the fluid in the cochlea. This causes the hair cells to move, sending messages to the brain. The brain processes these messages and tells you what you've heard.

When hearing loss occurs, a person may have difficulty hearing very soft sounds or very high-pitch sounds. **There are many causes of hearing loss, including injury, infection, exposure to loud sounds, and aging.** Some types of hearing loss can be helped with hearing aids.

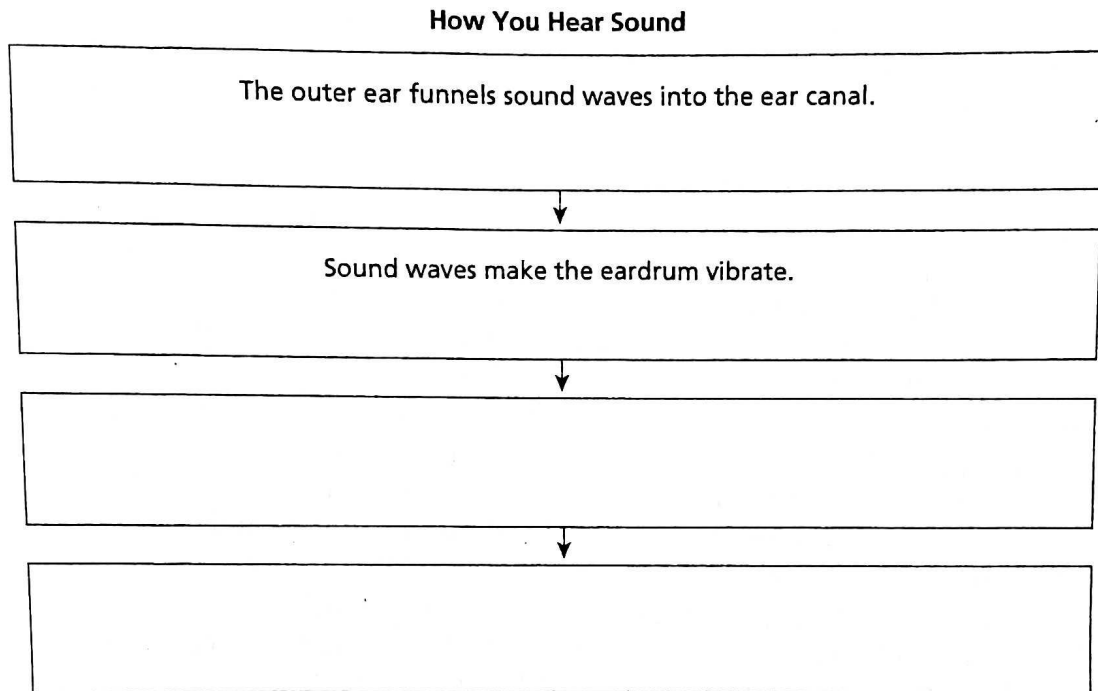
Sound ▪ *Guided Reading and Study*

How You Hear Sound (pp. 558–560)

This section describes how you hear sound and identifies causes of hearing loss.

Use Target Reading Skills

As you read The Human Ear, make a flowchart that shows how you hear sound. Put the steps of the process in separate boxes in the order in which they occur.



The Human Ear (pp. 558–559)

Match the three main sections of the ear with their functions.

Main Section

Function

- | | |
|-------------------|---|
| ___ 1. outer ear | a. Transmits sound waves inward |
| ___ 2. middle ear | b. Funnels sound waves |
| ___ 3. inner ear | c. Transforms sound waves into a form that travels to the brain |

4. The outermost part of your ear collects sound waves and directs them into a narrow region known as the _____.

5. What is the eardrum and where is it located?

6. What cavity of the inner ear is filled with fluid?

Sound ▪ *Guided Reading and Study*

How You Hear Sound *(continued)*

7. What part of the ear contains the three smallest bones in your body?

Hearing Loss (p. 560)

8. Circle the letter of each choice that is a cause of hearing loss.

- a. aging
- b. injury
- c. nerve fibers
- d. infection

9. Why is it dangerous to put objects into your ear, even to clean it?

10. How can an infection cause hearing loss?

11. What is the most common type of hearing loss?

12. When you know you are going to be exposed to loud noises, what should you do to prevent hearing loss?

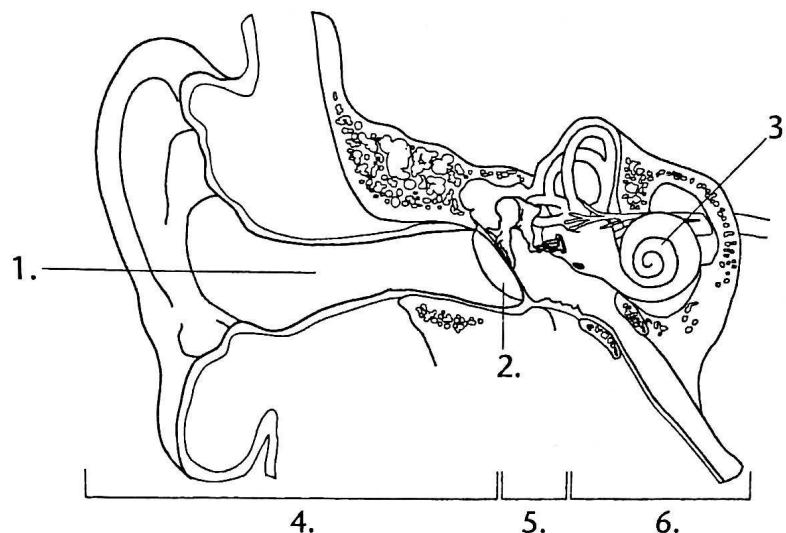
13. Is the following sentence true or false? Hearing aids are amplifiers.

Sound ▪ Review and Reinforce

How You Hear Sound

Understanding Main Ideas

Write the name and function of the part of the ear indicated next to the correct number.



1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Write the answer to the following question in the space provided.

7. Describe two causes of hearing loss.
