A9 · The ear: hearing and balance · Worked examples and practice

Name: _____ Date: _____

Worked examples

Read these first. There is one for each kind of question in this lesson.

Example 1 · Trace sound through the ear

List the parts that carry sound from the air to the brain, in order.

1. The pinna collects sound waves, and the auditory canal carries them in.
2. The tympanum vibrates.
3. The ossicles pass the vibrations to the cochlea.
4. Hair cells bend, and the auditory nerve carries action potentials to the brain.

Answer: Pinna, auditory canal, tympanum, ossicles, cochlea, auditory nerve.

Example 2 · Tell hearing from balance

A person hears normally but feels dizzy and unsteady. Which part of the inner ear is affected?

1. The cochlea is for hearing, and hearing is normal.
2. The semicircular canals are for balance.

Answer: The semicircular canals.

Practice

Questions 1 to 4 are easy. Questions 5 to 8 are medium. Questions 9 and 10 are harder.

EASY

1. Name the flap on the side of the head that collects sound waves.

EASY

2. Name the three tiny bones of the middle ear.

EASY

3. Name the coiled part of the inner ear.

EASY

4. Name the receptors for hearing.

MEDIUM

5. Explain why your ears "pop" when a plane climbs.

MEDIUM

6. State what fills the cochlea, and what moves in it when sound arrives.

MEDIUM

7. Name where action potentials from the cochlea go. Name where those from the semicircular canals go.

MEDIUM

8. Explain why there are three semicircular canals and not one.

HARDER

9. Years of loud noise have destroyed many hair cells in a worker's cochlea. Use the six steps to explain the hearing loss.

HARDER

10. You spin on a chair and stop. For a moment the room seems to keep turning. Explain, using the fluid in the semicircular canals.