

What Is Ear Anatomy?

Worksheet

The external ear collects sound waves, the middle ear amplifies vibrations using three tiny bones, and the internal ear converts those vibrations into nerve signals for hearing and balance.

Questions

1. Which bone is NOT one of the ossicles?

- A) Malleus
- B) Incus
- C) Stapes
- D) Cochlea

2. The eardrum (tympanic membrane) separates the

- A) External and middle ear
- B) Middle and internal ear
- C) Pinna and ear canal
- D) Cochlea and vestibule

3. Where does sound get converted into a nerve signal?

- A) Pinna
- B) Ear canal
- C) Middle ear ossicles
- D) Cochlea (internal ear)

4. What equalizes pressure in the middle ear?

- A) Oval window
- B) Eustachian tube
- C) Cochlea
- D) Pinna

5. A person flying in a plane feels ear pressure and 'pops' their ears by swallowing. Which structure equalizes this pressure?

6. A patient has hearing loss traced to damaged ossicles after an ear infection. Which region of the ear is affected?

7. Loud noise exposure damages hair cells and causes permanent hearing loss. Which structure and ear region are involved?

8. Define: What are the three regions of the ear?

9. Define: What structures are in the middle ear?

10. Define: What does the cochlea do?

Answer Key

1. D) Cochlea - The cochlea is a hearing organ in the inner ear, not an ossicle.
2. A) External and middle ear - The tympanic membrane is the boundary between the external and middle ear.
3. D) Cochlea (internal ear) - The cochlea's hair cells transduce vibrations into nerve impulses.
4. B) Eustachian tube - The Eustachian tube connects the middle ear to the throat to balance pressure.
5. Cabin pressure changes create a pressure difference across the eardrum. The Eustachian tube connects the middle ear to the throat. Swallowing opens the Eustachian tube. Air flows in and out of the middle ear, equalizing pressure and relieving discomfort.
6. The ossicles (malleus, incus, stapes) are located in the middle ear. They mechanically amplify eardrum vibrations toward the oval window. Infection-related damage here reduces sound transmission efficiency. This is called conductive hearing loss, a middle ear problem.
7. Hair cells sit inside the cochlea, part of the internal ear. They convert fluid vibrations into electrical nerve signals. Excessive noise can permanently damage these non-regenerating cells. This is sensorineural hearing loss, an inner ear/nerve problem.
8. The external, middle, and internal (inner) ear.
9. The three ossicles - malleus, incus, and stapes - plus the Eustachian tube.
10. Converts sound vibrations into nerve signals for hearing.

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