

Chapter 9 (Honors) Special Senses Worksheet

General Senses

Match the type of receptor with its description and/or function.

Types of Receptors

- | | |
|---------------------------|-----------------------------------------------------------------------|
| 1. Chemoreceptors _____ | a. Stimulated by changes in pressure or movement, such as bending. |
| 2. Mechanoreceptors _____ | b. Stimulated by changes in temperature. |
| 3. Nociceptors _____ | c. Stimulated by tissue damage. |
| 4. Photoreceptors _____ | d. Stimulated by changes in the chemical concentration of substances. |
| 5. Thermoreceptors _____ | e. Stimulated by light energy. |

Sensory Receptors Associated with the Skin

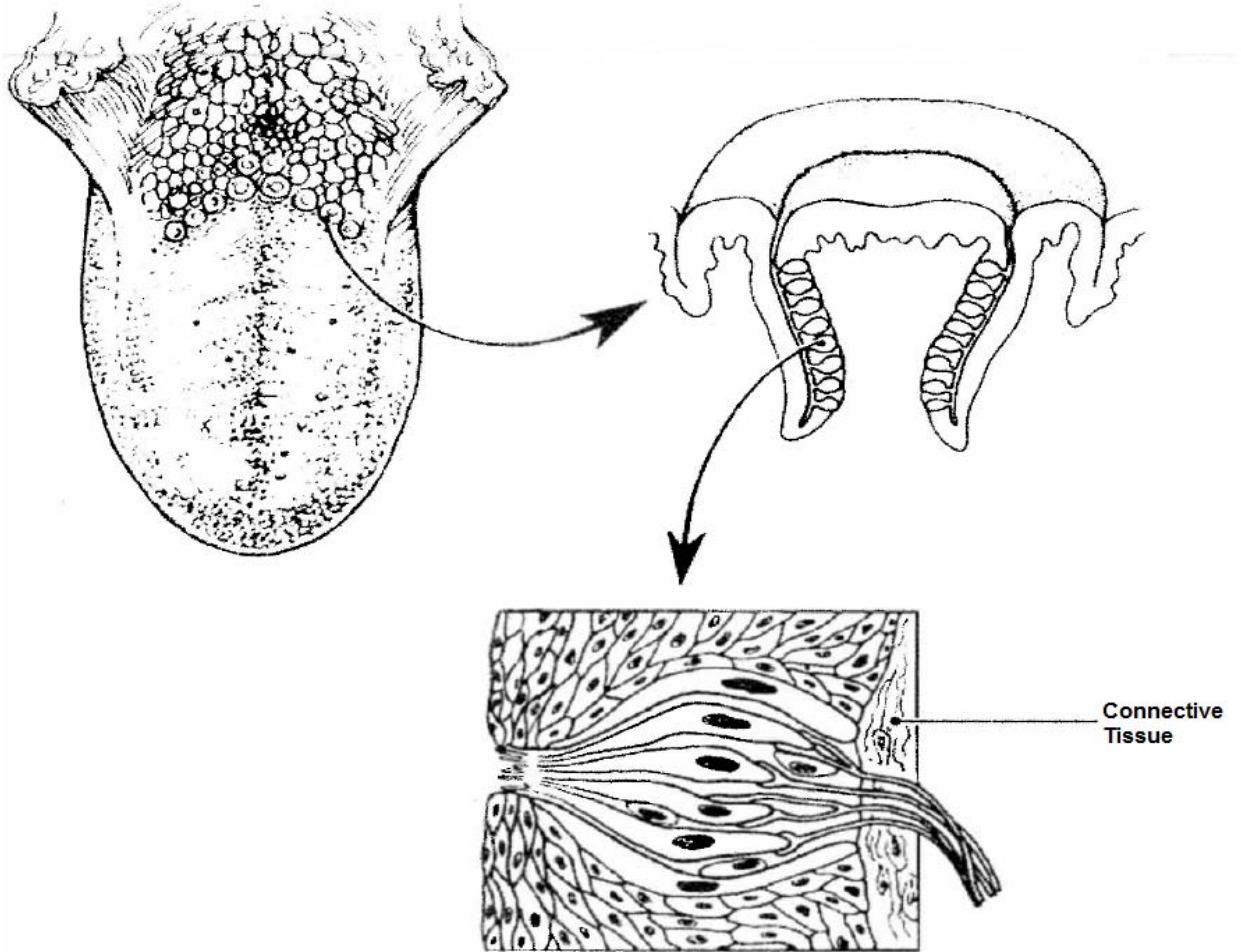
Fill in the table about skin sensory receptors. The first skin sensory receptor has been done as an example.

	General Receptor	Type of Receptor	Examples of Receptor	Function of Receptor
1.	Free Nerve Endings	Nociceptor Mechanoreceptor	(No specific names of free nerve ending receptors)	Sense pain, temperature, itch, and movement
2.	Cold receptors			
3.	Hot receptors			
4.	Touch receptors		Merkel disks	

Taste

Using different colors and the list below, color and label the different parts involved with the sense of taste. Then answer the questions about the sense of taste.

- Taste hairs
- Papillae
- Sensory nerve
- Supporting cell
- Taste bud
- Taste cell
- Taste pore

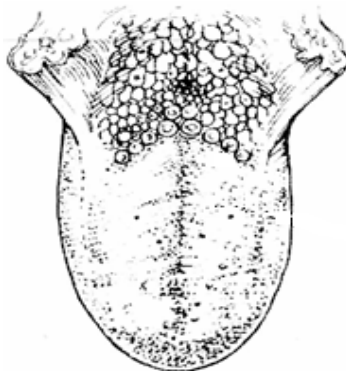


Complete the following paragraph about how the brain receives taste information. Answers may repeat.

A taste bud consists of 2 types of cells, a supporting cell and a 1 _____.
 At the end of taste cells are 2 _____, which contain 3 that bind to
 taste molecules. The taste hairs project through an opening called a
 4 _____. When a taste molecule binds to a 5 ,
 an 6 _____ is generated in the sensory nerve attached to the taste cell.
 These action potentials travel to the 7 area of the cerebral cortex where
 the brain perceives the taste.

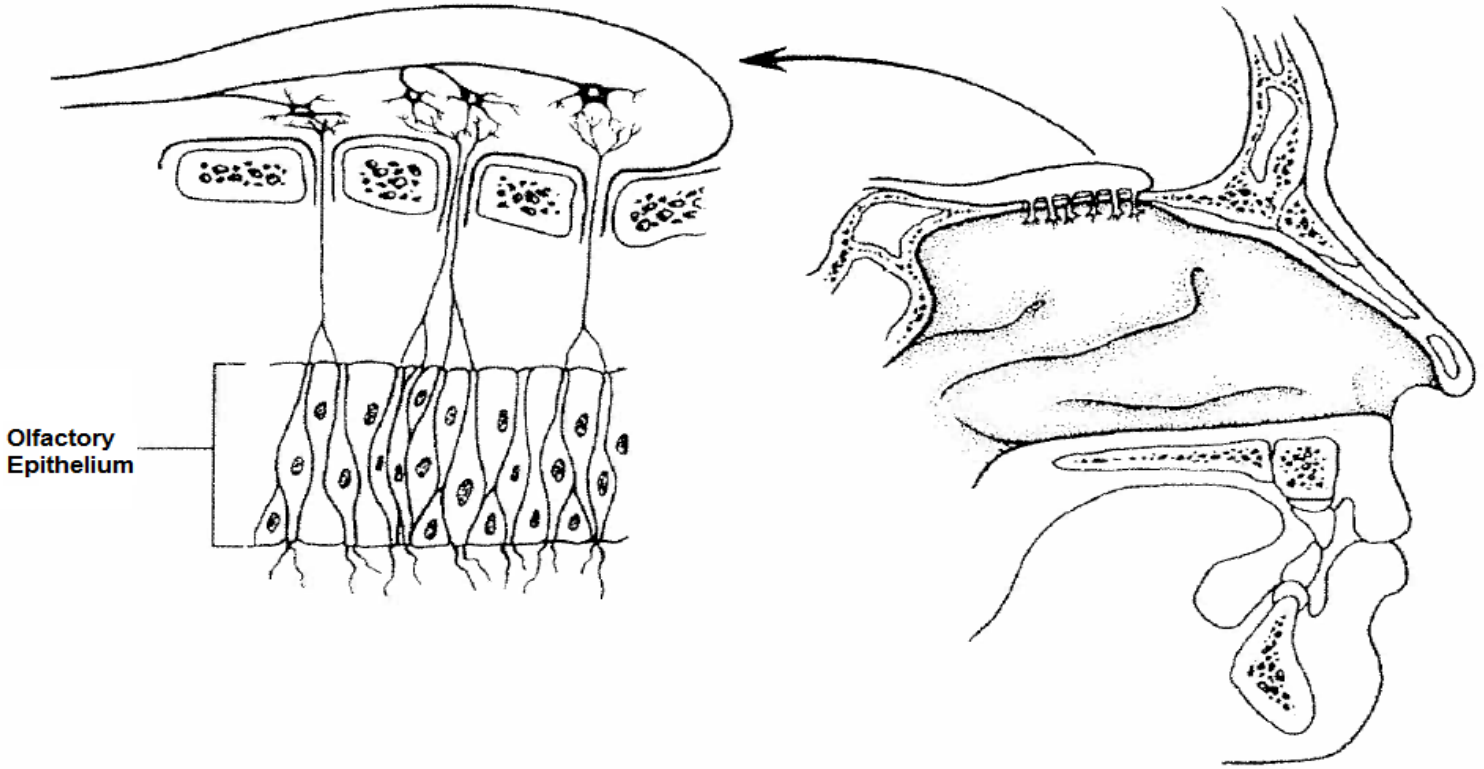
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____

8. Draw, color and label the different areas of taste on the tongue.



Smell

Using different colors and the list below, color and label the different parts involved with the sense of smell. Then answers the questions about the sense of smell.



- Olfactory bulb
- Olfactory cilia
- Olfactory neuron
- Olfactory nerve (Cranial Nerve I)
- Olfactory tract

Complete the following paragraph about how the brain receives odor information.

The sense of smell is called 1. 2 are bipolar neurons located in the superior part of the nasal cavity. At the ends of the olfactory neurons are 3, which contain 4, which bind to odor molecules called 5. When an odorant stimulates olfactory cells, the olfactory cells send 6 up the 7 which synapses with interneurons located in the 8. The interneurons then send its action potentials through the 9, which sends its information to the 10 located within the frontal and temporal lobes of the brain. Its at this area of the brain where the smell is perceived.

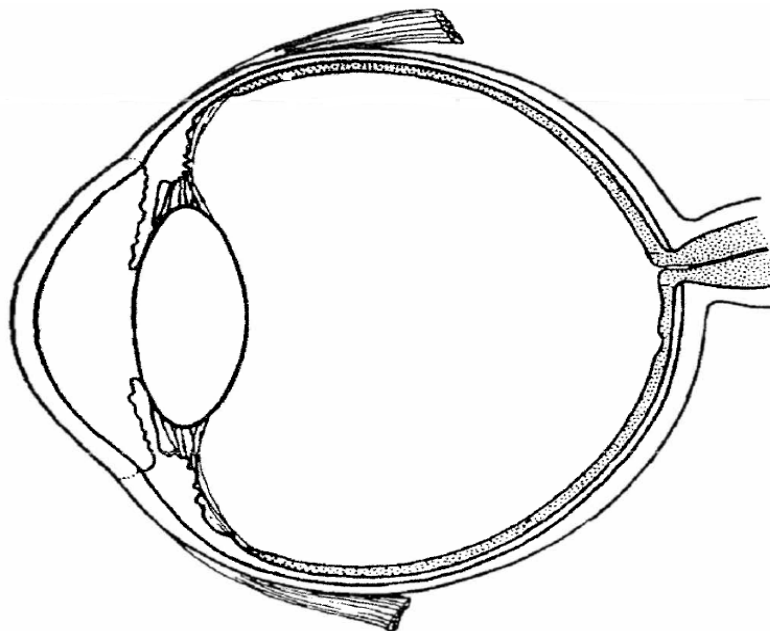
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Match the following terms to their description or function.

- | | |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| 10. _____ Olfactory bulb | a. Bipolar neurons that are the main cells for olfaction. |
| 11. _____ Olfactory cilia | b. Contains interneurons that synapse with olfactory nerves and relays action potentials to the brain. |
| 12. _____ Olfactory neuron | c. The end of the olfactory tract where the synapse between the olfactory nerves and the interneurons of the olfactory tract take place. |
| 13. _____ Olfactory receptor | d. Structures found at the ends of olfactory cilia; its function is to bind to odorants. |
| 14. _____ Olfactory tract | e. The ends of the olfactory neurons dendrites that contains olfactory receptors. |

Vision

Using different colors and the list below, color and label the different parts involved with the sense of vision. Then answers the questions about the sense of vision.



- | | | |
|-------------------------------------|-----------------------------------|--------------------------------------------|
| <input type="radio"/> Aqueous humor | <input type="radio"/> Iris | <input type="radio"/> Retina |
| <input type="radio"/> Choroid | <input type="radio"/> Lens | <input type="radio"/> Sclera |
| <input type="radio"/> Ciliary body | <input type="radio"/> Optic nerve | <input type="radio"/> Suspensory ligaments |
| <input type="radio"/> Cornea | <input type="radio"/> Pupil | <input type="radio"/> Vitreous humor |

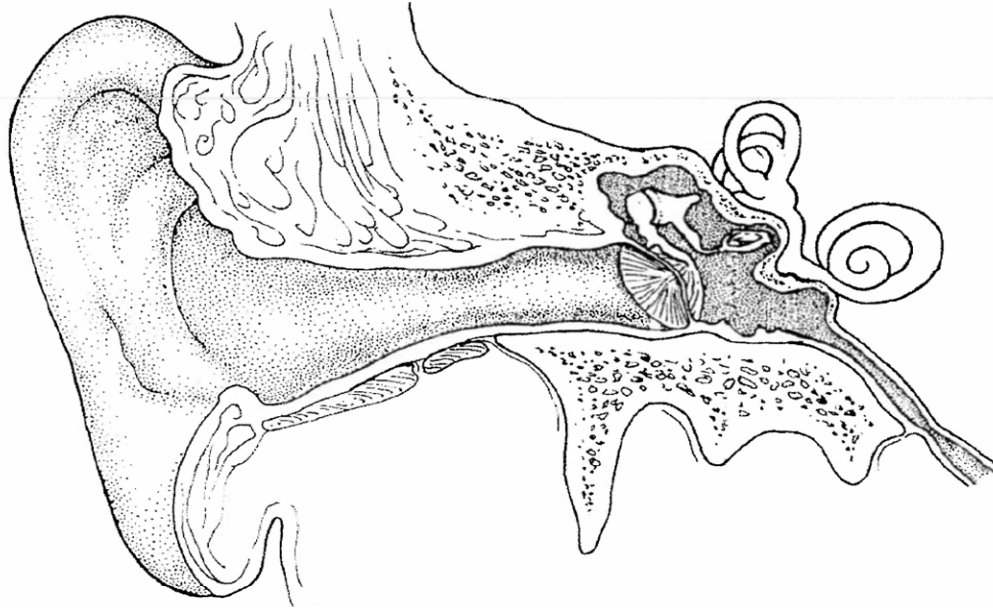
Complete the following paragraph about how the brain receives visual information.

The 1 , the 2 , and the 3 , all focus images on the 4 .
The shape of the lens is controlled by the 5 _____. When we view distant objects, the ciliary muscles relax, causing the 6 _____ attached to the 7 _____ to be taut; therefore the lens's shape is 8 . When we view near objects, the 9 _____ contract, releasing the tension on the 10 _____. The shape of the lens becomes 11 . The pathway for vision begins once light has been captured by the 12 in the 13 . The 2 types of photoreceptors in the sensory retina are 14 and 15 . Rods are best suited for very dim 16 . They do not provide us with 17 _____. The cones require much more 18 . They provide us with 19 _____. For us to perceive vision, light must strike the rods and cones. Rods and cones synapse with 20 _____ cells, which in turn synapse with ganglion cells that initiate 21 _____. Action potentials created in the rods and cones are passed to the bipolar neurons, which are passed to the ganglion cells. Action potentials created by the ganglion cells travel down nerve fibers, which assemble to form the 22 _____. The optic nerves carry nerve impulses from the 23 to the 24 _____. From the optic chiasm, action potentials then travel through the 26 _____ before entering the 27 lobe. The occipital lobe of the brain contains the 28 _____ of the cerebrum, which is responsible for sensing and interpreting 29 .

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____
24. _____
25. _____
26. _____
27. _____
28. _____
29. _____

Hearing

Using different colors and the list below, color and label the different parts involved with the sense of hearing. Then answers the questions about the sense of hearing.



- | | | | |
|------------------------------------------------|----------------------------------|-------------------------------------------|-----------------------------------------|
| <input type="radio"/> Auditory tube | <input type="radio"/> Incus | <input type="radio"/> Outer ear | <input type="radio"/> Stapes |
| <input type="radio"/> Auricle | <input type="radio"/> Inner ear | <input type="radio"/> Oval window | <input type="radio"/> Tympanic membrane |
| <input type="radio"/> Cochlea | <input type="radio"/> Malleus | <input type="radio"/> Round window | <input type="radio"/> Vestibule |
| <input type="radio"/> External auditory meatus | <input type="radio"/> Middle ear | <input type="radio"/> Semicircular canals | |

Complete the following paragraph about how the brain receives auditory information.

The process of hearing begins when 1 enter the 2 and strike the 3 causing it to move back and forth or 4. The vibration of the tympanic membrane is transferred to the 3 ossicles of the ear. From the tympanic membrane the vibration travels to the 5, then to the 6, and finally to the 7. The vibration in the stapes is then transferred to the 8, causing it to vibrate and pass on the pressure to the fluids within the 9 of the inner ear. There are 2 types of fluid found within the cochlea. The first fluid is called 10, which is found within the 11 (vestibular canal) and the 12 (tympanic canal). The second type of fluid is called 13, which is found within the 14. The pressure waves in the perilymph of the scala vestibuli pass through the 15 and cause vibrations of the 16. Pressure waves in the endolymph, within the cochlear duct, causes movements in the 17. As the basilar membrane moves, 18 on the basilar membrane also move. At the end of the hair cells are 19, which are embedded in the tectoral membrane. The movement of hair cells causes the microvilli to 20. The bending of the microvilli stimulates the hair cells, which induces 21 in the 22. The action potentials in the cochlear nerve are sent to the 23 of the brain, where hearing is perceived and interpreted.

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____
13. _____
14. _____
15. _____
16. _____
17. _____
18. _____
19. _____
20. _____
21. _____
22. _____
23. _____