

Unit Two  
Homework Assignment Six  
C16 Special Senses

How Hearing Works (1.5 min)

1. What structure captures the sound waves?
2. What structure transports the sound waves to the tympanic membrane (ear drum)?
3. What are the three bones in the middle ear?
4. What bone is attached to the oval window?
5. What is the name for the organ of hearing?
6. Which hair cells resonate to high frequency sound?
7. Which hair cells resonate to low frequency sound?

Hearing (1 min)

1. What is the function of the tympanic membrane and inner ear bones?
2. What happens when the hair cells are bent by the disturbance in the inner ear fluid?

Effect of Sound Waves on the Cochlear Structures

1. Where is the fluid disturbed when the stapes vibrates?
2. What structure is moved by the disturbance caused in the perilymph?
3. What happens to the sound waves in the perilymph when they reach the round window?

Vision (45 sec)

1. What structure must light be focused on for the brain to see an image?
2. What cells are responsible for the transduction of light energy into action potentials (electrical signals)?
3. What cells are responsible for the perception of light and dark?
4. What cells are responsible for the perception of color?

How the eye works animation (3:22 min)

1. What happens to light as it passes through the cornea and lens to the retina?
2. What is important for keeping things in focus?
3. What is the focal point?
4. What happens if the eye is too long?  
Where will the focal point be?  
Will the object be in focus?  
Condition called?
5. What happens if the eye is too short?  
Where will the focal point be?  
Will the object be in focus?  
Condition called?

What happens inside your eye? (8 min)

1. Are there blood vessels in the cornea? Do eyes breathe? Explain.
2. What are the fastest muscles in your body?
3. What causes red eye in a photograph?
4. What will be out of focus if you are nearsighted? Where will the light be focused at in relationship to the retina?
5. How many skeletal muscles move the eye within the eye socket?

6. How many colors may a cone see?
7. What part of your field of vision do the cones “see”? Is this part of your vision in color?
8. What is the eye’s blind spot?
9. Why don’t we see the blind spot when we look at something?

The Servant Brain (Different Ways of Knowing) (10 min)

1. What is Daniel’s talk about?
2. How does Daniel believe we gain knowledge?
3. What is synesthesia?

Ten Special Savants (8 min)

1. What is savant syndrome?
2. What type of disorder is commonly associated with savants?
3. Do savants have high or low IQ?
4. How fast is Kim Peek able to read a book? How much does he remember?