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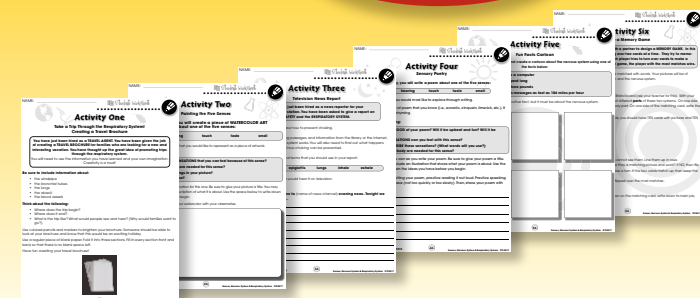
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# The Sense of Hearing

1. You be the teacher! Someone has matched the words on the left to the definitions on the right. Are they correct? If **yes**, mark them correct with a check mark in the circle beside each. If **no**, write an X in the circle and correct the work by drawing an arrow to the correct definition. You may use a dictionary to help.

<input type="radio"/>	<b>eardrum</b>	→	A	The part of the ear that is outside our head
<input type="radio"/>	<b>middle ear</b>	→	B	Thin layer of skin covering the bottom end of the ear canal
<input type="radio"/>	<b>inner ear</b>	→	C	The location of the smallest bones in the body
<input type="radio"/>	<b>ear canal</b>	→	D	Created in the air when things move
<input type="radio"/>	<b>sound vibrations</b>	→	E	One-inch long tube that leads into the head
<input type="radio"/>	<b>outer ear</b>	→	F	The deepest part of our ear

2. Label the main parts of the ear. Use the words in the list.

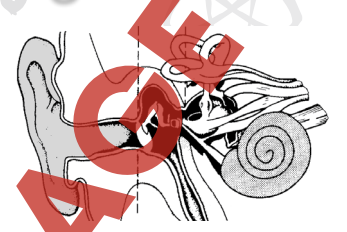
inner ear    outer ear    middle ear    ear canal

a) \_\_\_\_\_ c) \_\_\_\_\_  
b) \_\_\_\_\_ d) \_\_\_\_\_



# The Sense of Hearing

**W**e hear sound when movement – like a door slamming – stirs the air around us and makes **vibrations** in the air. These vibrations move into our ears. They travel inside our head and are turned into **electrical signals**. These signals are sent to our brain, and a message telling us what the sound means is made. Sound waves travel very fast. This means we understand what we hear as soon as we hear it.



The parts of the ear are divided into three main areas: the outer ear, the middle ear, and the inner ear.

Ear Part	Description/Location	What It Does (Function)
<b>outer ear</b>	<ul style="list-style-type: none"> <li>the part of the ear that we can see on the side of the head</li> <li>shaped like a big funnel</li> <li>also called the <b>auricle</b></li> </ul>	<ul style="list-style-type: none"> <li>job is to <b>move as much sound as possible</b> into our head</li> <li>the "funnel" traps sound so that it goes into the ear</li> </ul>
<b>ear canal</b>	<ul style="list-style-type: none"> <li>a tube about one inch long that leads into the skull</li> </ul>	<ul style="list-style-type: none"> <li>the sound travels down the ear canal to the eardrum</li> </ul>
<b>eardrum</b>	<ul style="list-style-type: none"> <li>at the bottom of the ear canal</li> <li>the beginning of the <b>middle ear</b></li> </ul>	<ul style="list-style-type: none"> <li>job is to <b>increase the power of the sound</b>, and move it deep into our head</li> <li>vibrates like the top of a drum when sound hits it</li> </ul>
<b>stirrup, hammer and anvil</b>	<ul style="list-style-type: none"> <li>all these parts are behind the eardrum</li> <li>three of the smallest bones in the body, each named for the shape of the bone</li> </ul>	<ul style="list-style-type: none"> <li>these bones vibrate when sound passes by</li> </ul>
<b>inner ear</b>	<ul style="list-style-type: none"> <li>is deep inside our skull</li> </ul>	<ul style="list-style-type: none"> <li>job is to <b>send the sound vibrations to the brain</b></li> </ul>
<b>cochlea</b>	<ul style="list-style-type: none"> <li>part of the inner ear</li> <li>looks like a snail shell</li> </ul>	<ul style="list-style-type: none"> <li>the sound travels into the cochlea and over the nerve cells</li> </ul>
<b>nerve cells</b>	<ul style="list-style-type: none"> <li>located inside the cochlea</li> <li>there are many of these tiny cells</li> </ul>	<ul style="list-style-type: none"> <li>sound is turned into electrical signals</li> <li>these signals are sent along the nerve cells to the brain</li> </ul>

Why are sound vibrations important for hearing?

**STOP** \_\_\_\_\_  
\_\_\_\_\_



# The Sense of Hearing

1. Use the terms in the list to answer each question. **Four** terms will be left over.

- |                    |           |            |            |
|--------------------|-----------|------------|------------|
| very slow          | very fast | cochlea    | ear canal  |
| electrical signals | inner ear | middle ear | optic tube |
| optic nerve        |           |            |            |

- a) Where is the eardrum found?  
b) Deep in the ear, what are sound vibrations turned into?  
c) Sending signals to the brain is the job of which part of the ear?  
d) How fast or slow does sound travel?  
e) What is the name of the tube that leads into our ear?

2. Fill in each blank with a term from the list. **Two** terms will be left over.

- |           |         |         |         |       |            |
|-----------|---------|---------|---------|-------|------------|
| ear canal | eardrum | three   | auricle | skull | anvil      |
| inner ear | hammer  | cochlea | stirrup | seven | middle ear |

The outer ear includes the \_\_\_\_\_ which we can see on the outside of the head.  
The \_\_\_\_\_ is a one inch long tube that leads into the ear. The \_\_\_\_\_ is at the bottom of the ear canal. This is where the \_\_\_\_\_ begins. Behind the eardrum are \_\_\_\_\_ very small bones. They are called the \_\_\_\_\_ and \_\_\_\_\_. The \_\_\_\_\_ is deep in our skull. It contains the \_\_\_\_\_ and nerve cells.



# The Sense of Hearing

3. Why is the **eardrum** important?  
\_\_\_\_\_  
\_\_\_\_\_
4. What is the job of the **inner ear**?  
\_\_\_\_\_  
\_\_\_\_\_
5. How does sound travel deep into the ear? Use the terms **inner ear**, **outer ear**, **middle ear**, and **ear canal** in your answer.  
\_\_\_\_\_  
\_\_\_\_\_

## Extension & Application

6. Research **two** different **musical instruments**. You could choose the piano, guitar, tuba, drum, flute or any instrument that you like. Just make sure that the instruments you choose are very different from each other. Find out what materials each is made of. What kinds of sounds do they make? How are they made? Be sure to include a picture or illustration of each instrument. Write down these findings in the chart on the next page. Tell why you chose these instruments.  
**Bonus:** Can you find out when each instrument was first **invented**? Who are some well-known musicians who play these instruments?
7. You have probably heard that **loud noises can damage your hearing**. Loud sounds can be a real problem if they last for a long time. Do some research to find out how high volume sounds can injure your hearing.

Here are some questions for you to think about: • **What part or parts of the ears get damaged by loud sounds?** • **How are they damaged?** • **Can ears be damaged by sound in a very short period of time (like a loud crash or bang), or does damage happen only over a longer period of time?**

You can look for information in the library or on the Internet. Write down your information in a one-page report.





# Taste and Smell

How connected are our senses of taste and smell?

We have learned that without our sense of smell, our sense of taste is weak. In other words, food tastes stronger when we can smell it, too.

Now it's time to find this out for yourself! Work with a partner.

FOR THIS ACTIVITY, you will need: • 2 pieces of raw potato (on a plate or paper towel) • 2 pieces of raw apple • a blindfold

### STEPS:

1. Wash your hands before you begin.
2. Be sure that the pieces of potato and apple are all about the **same size**. One piece of potato and **one** piece of apple should be on a desk or table in front of you.
3. Partner A puts on the blindfold. (Partner B stands close by to help Partner A.)
4. Partner B moves the pieces of apple and potato on the desk so that Partner A does not know which is which.
5. Partner A holds his or her nose **shut**. Then they pick up one of the pieces of food and taste it. What are they tasting - the potato or the apple?
6. Partner A repeats Step 5 with the second piece of food.
7. Partner B tells Partner A whether they were correct.
8. Switch roles and repeat Steps 1 to 7.

Record your results below. What did the foods taste like? Could you tell the difference between them?

\_\_\_\_\_

Did your experience **support** what you have learned (that taste and smell are connected)?

\_\_\_\_\_



# Crossword Puzzle!

### Across

2. The lungs work like a \_\_\_\_\_
6. The two kinds of nerves are sensory nerves and \_\_\_\_\_ nerves
8. The colored part of the eye
9. Helps us see near and far
10. Connects the brain to the spinal cord
11. The ear \_\_\_\_\_ is the tube that leads into the ear
12. Feeling pain is important for our \_\_\_\_\_
14. A single bone in the spine
15. Our mouth and nasal cavity are \_\_\_\_\_ inside our head
18. The \_\_\_\_\_ nerve links the retina to the brain
19. Nerve \_\_\_\_\_ are also called neurons
20. The spinal cord is a thick \_\_\_\_\_ of nerves

### Down

1. The cerebellum is important for balance and \_\_\_\_\_
3. The back of the eye where the image is made
4. The receptors in our \_\_\_\_\_ allow us to smell
5. Sound enters the head through the \_\_\_\_\_ ear
7. Nerves carry \_\_\_\_\_ to and from the brain
13. The spinal cord is \_\_\_\_\_ by the vertebrae
16. We breathe in the gas called \_\_\_\_\_
17. The nervous system is like a \_\_\_\_\_

### Word List

- |               |              |
|---------------|--------------|
| bundle        | outer        |
| train station | posture      |
| lens          | nasal cavity |
| vertebra      | messages     |
| cells         | computer     |
| motor         | protected    |
| iris          | retina       |
| brain stem    | oxygen       |
| canal         | connected    |
| survival      | optic        |



# Comprehension Quiz

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### Part A

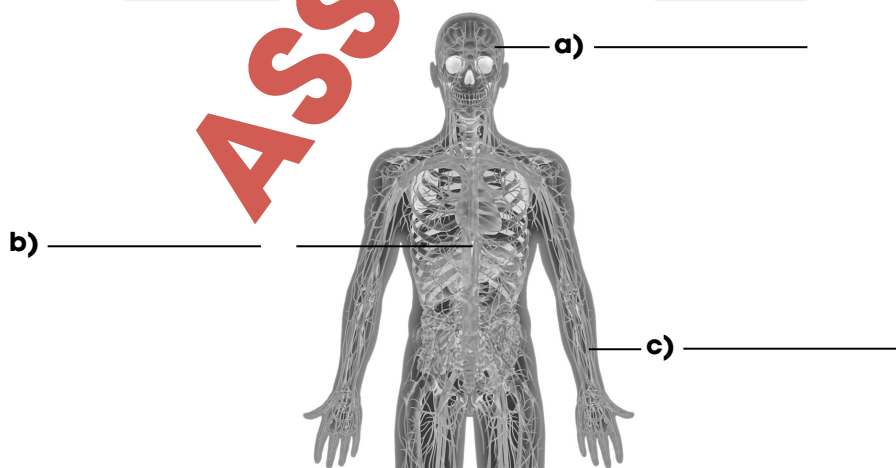
1. Circle **T** if the statement is TRUE or **F** if it is FALSE.

- 1) Our vertebrae protect our spinal cord from damage.
- 2) Nerve cells carry messages to and from the brain so that we can understand the world around us.
- 3) The three parts of the brain are called the cerebrum, cerebellum and brain stalk.
- 4) The iris is the colored part of the eye.
- 5) The sense of taste is *not* connected to the sense of smell.
- 6) Our lungs expand when we exhale.
- 7) The epiglottis covers the top part of the ear canal.
- 8) The small bones in the inner ear vibrate when sound passes by.

### Part B

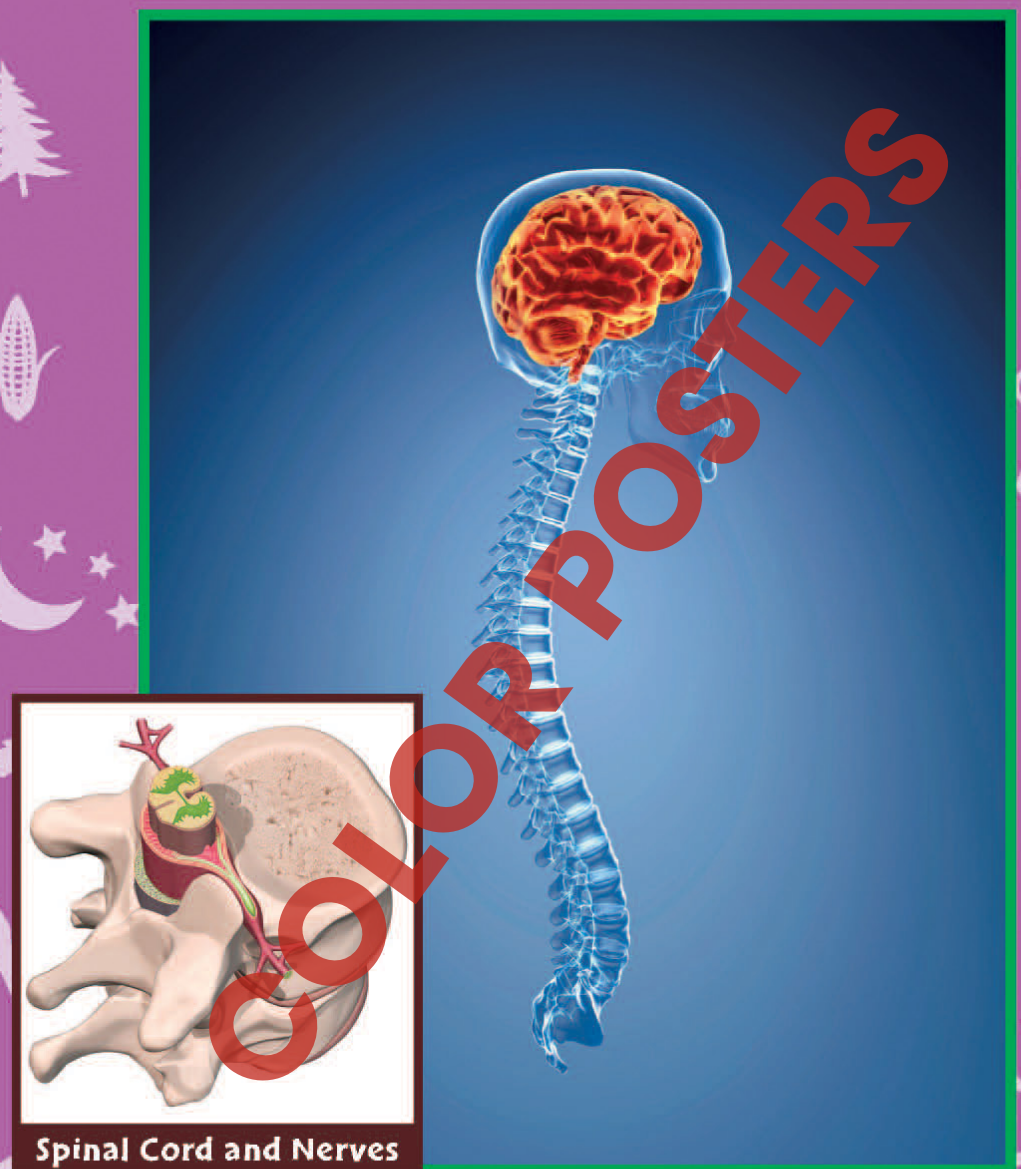
Label the nervous system in the diagram below. Use the words in the list.

spinal cord      nerves      brain



SUBTOTAL: /14

# Spinal Cord



NAME: \_\_\_\_\_

After You Read 



# The Sense of Sight



3. How are the eyelashes and eyebrows similar and different?

\_\_\_\_\_

4. Why does the **lens** of the eye need to be able to change shape?

\_\_\_\_\_

5. Describe the **path** that light follows as it enters the eye. (Hint: this path ends when light hits the retina.) Tell what happens when light hits the retina. Look at the chart in the reading passage to help you.

\_\_\_\_\_

6. Look at the diagram on the next page. Label the **parts of the eye**. Use the information from the reading passage, the Internet, or a book from the library to help you.

## Extension & Application

7. **Helen Keller** was a very famous writer from the past who was also blind and deaf. Research to find out about Helen's life. Imagine that you had a chance to meet her. Using what you have learned from your research, write a **short story** describing your meeting.

Think about the following: • **What kind of person was she?** • **How would you communicate with each other?** • **Are there any special questions you would want to ask?** • **How would she answer your questions?**

8. Many people wear glasses to improve their eyesight. **Interview two people** you know who wear glasses. They could be friends, family members or even yourself! Find out when they first got glasses, why they need them, and how they feel about them.

**3.** **eyelashes:** tiny hairs on the eyelid. **eyebrows:** ridge of hairs above the eye. **both:** protect the eye from damage

**4.** To see things that are close to us and far away

**5.** Light is let in by the iris and passes through the pupil to the lens. Then, it passes through the lens to the retina where the image is created.

**6.**

a) lens  
b) cornea  
c) pupil  
d) iris  
e) optic nerve

**7.** Answers will vary

**8.** Answers will vary

**1.** ✓ eardrum  
✓ middle ear  
✗ inner ear - F

**2.** ✓ ear canal  
✓ sound vibrations  
✗ outer ear - A

**1.**

a) middle ear  
b) electrical signals  
c) optic nerve  
d) very fast  
e) ear canal

**2.**

a) auricle  
b) ear canal  
c) eardrum  
d) middle ear  
e) three  
f) hammer/anvil/stirrup  
g) hammer/anvil/stirrup  
h) hammer/anvil/stirrup  
i) inner ear  
j) cochlea

**3.** It increases the power of the sound

**4.** To send sound vibrations to the brain

**5.** It travels from the outer ear, through the ear canal, to the middle ear, and into the inner ear


**6.** Answers will vary

**7.** Answers will vary depending on resources used

**21** Answers will vary

**22**

**23**

**24** 

EASY MARKING ANSWER KEY