What Are The Jobs Of Your Brain? U-6 L4

Exploring Science / Historical Steps

Down Memory Lane On The Operating Table

In the 1930s, **Dr. Wilder Penfield** did his now famous work to map the brain.

As a **neurosurgeon**, a surgeon who is an expert on neurons (nerve cells), Dr. Wilder sometimes operated on the brain to help people with seizures. Fortunately, the brain itself has no nerve endings for pain. While patients were awake, he touched exposed parts with an electric probe. This helped him find any areas that were not working properly.

Penfield was amazed to discover that touching certain parts caused patients to "hear" or even "see" events from their past! The memory of the experiences were somehow stored in their brains.

He discovered that each of these experiences seemed to be stored in an exact spot in the brain.

➢ Do you think that some sort of change takes place in brain cells when you learn something? Explain.

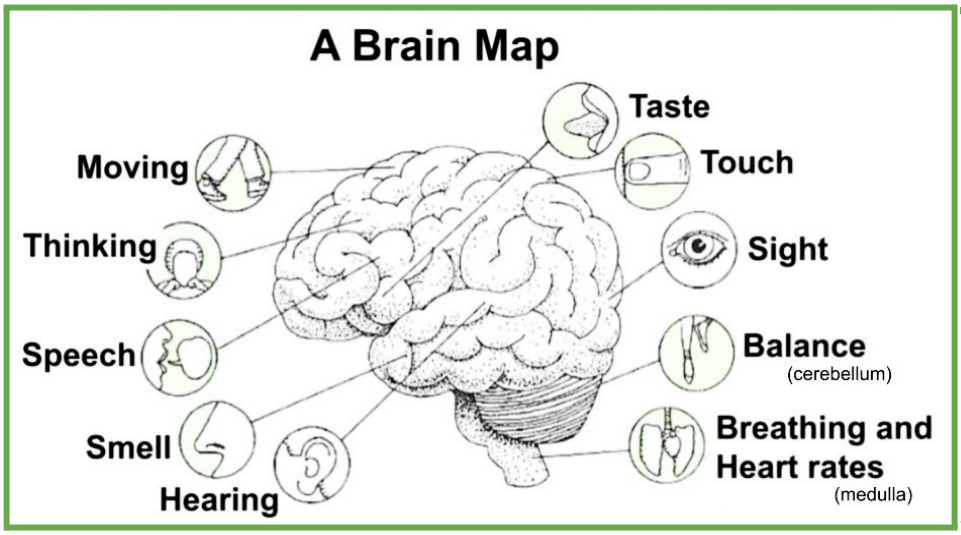
Your Brain

The work of Dr. Penfield helped scientists draw more accurate maps of the human brain. Different parts of your brain have different jobs.

The brain's largest part is the **cerebrum** (ser-EE-brum). The top of your skull covers and protects the cerebrum. You use most of your cerebrum to think, reason, and remember. Like a computer, your cerebrum sorts and stores information.

Messages from each sense organ go to certain areas of the cerebrum. There the messages are interpreted. You can find these control centers on the brain map.

You do not see anything until nerve messages reach your brain's center for sight. The same is true for your senses of hearing, smell, taste, and touch. You can locate these areas on the brain map.



The cerebrum controls many activities, but the cerebellum and the medulla are also vital parts of the brain.

Other areas of the cerebrum control your voluntary muscles. (Remember that you are able to move these muscles at will).

The **cerebellum** (ser-uh-BEL-um) is the part of the brain located below the cerebrum, at the back of your head. The cerebellum helps your muscles work together smoothly. It also helps you keep your balance.

The **medulla** (mih-DUL-uh) connects the brain to the spinal cord. Your heart rate and breathing are controlled by the medulla. So are movements of involuntary muscles, such as those in your digestive system. Some reflex actions, such as blinking and yawning, are also centered in the medulla.

➢ To Do Yourself

What are the parts of the vertebrate brain?

You will need:

Sheep brain from a butcher or a supply company; tray; large pins; paper; drawings of the brain of a sheep and a human

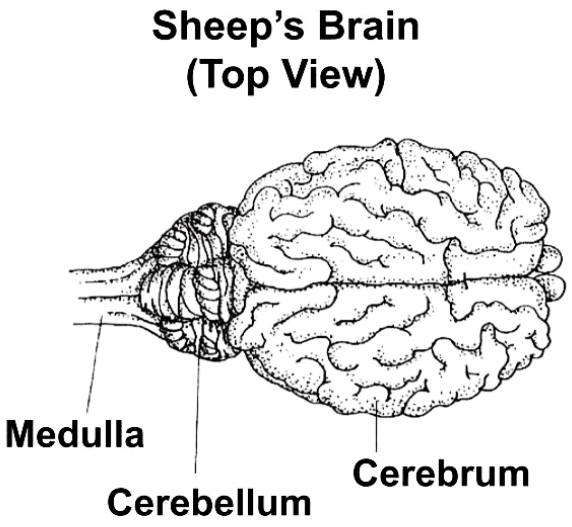
1. Place the sheep brain in the tray. Use the drawing of the human brain to locate the different parts.

2. Locate the cerebrum of the sheep's brain. How does it compare to that of a human?

3. Locate the cerebellum of the sheep's brain. Compare it to that of the human.

4. Locate and compare the medulla of the sheep's brain to that of the human.

5. For a bigger challenge, cut the brain in half from front to back. Search online for labeled images of the key inner structures.



Questions

1. How are the sheep's brain and human brain alike and different?_____

_____

2. What part of the brain connects it to the rest of the body?_____

3. How does the sheep brain compare with the fish brain (from the last lesson)? _____

_____

REVIEW U-6 L-4

I. Write the letter of the part of the brain that controls each of the numbered functions.

a. cerebrum	**b. cerebellum**	**c. medulla**
1. ____ balance	**4.** ____ memory	**6.** ____ muscle coordination
2. ____ reason	**5.** ____ hearing	**7.** ____ stomach contractions
3. ____ heart rate		**8.** ____ voluntary movement

II. Swallowing starts as a voluntary action, but continues as an involuntary action. What parts of the brain control … **(a)** the start of swallowing? **(b)** the rest of the action?

a)_____ **b)**_____

III. A person may "see stars" after a blow to the back of the head. Check the brain map, and then infer why this happens. [A reminder: Inferring is guessing based on knowledge.]