

Brains!

1. How much does the average adult human brain weigh?

2. Albert Einstein had a big brain and that's why he was so smart. True / False

3. The left hemisphere of the brain is usually used for (circle all that apply):

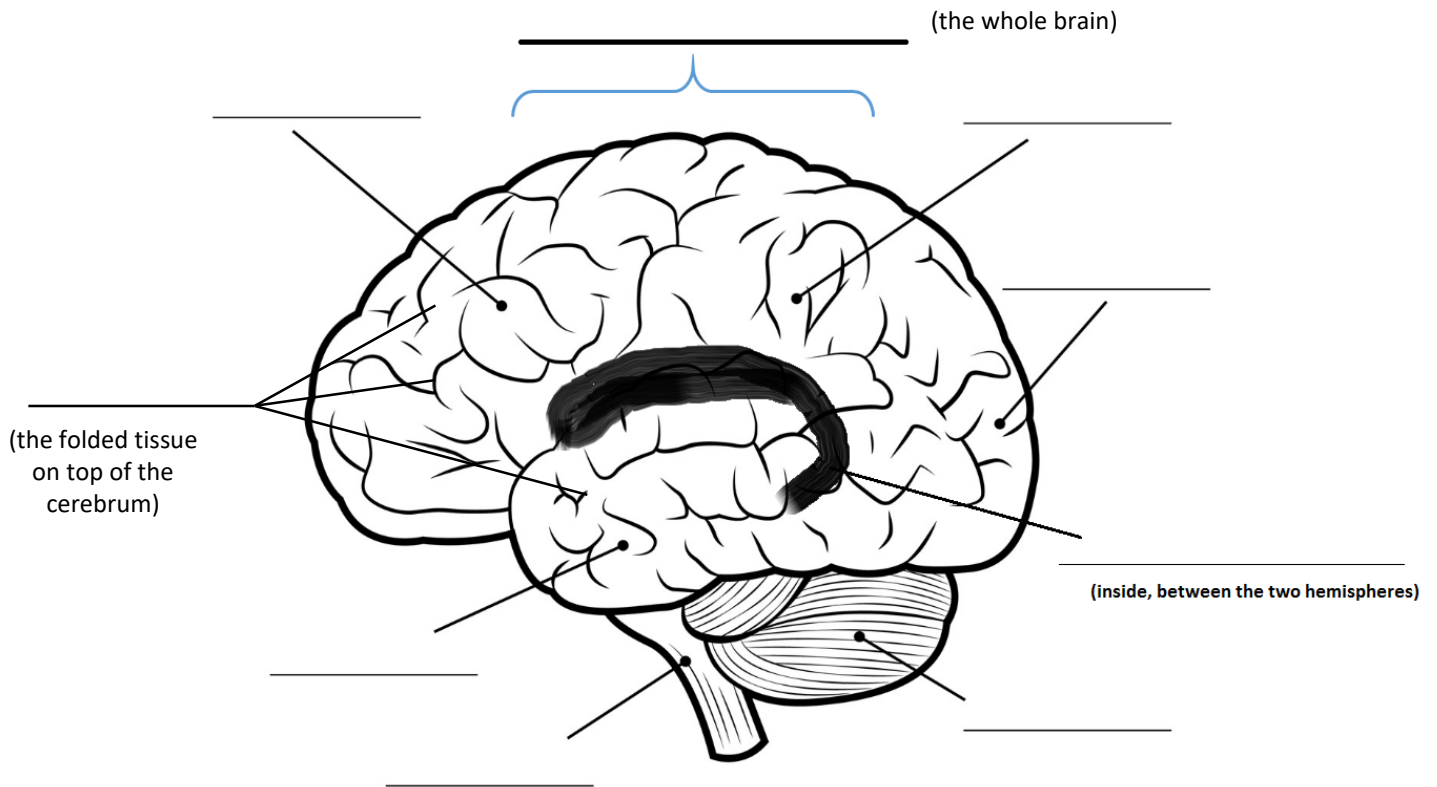
- | | | | |
|-------------|----------|-------------------|---------|
| art | language | music | speech |
| imagination | math | spatial awareness | writing |

4. The right hemisphere of the brain is usually used for (circle all that apply):

- | | | | |
|-------------|----------|-------------------|---------|
| art | language | music | speech |
| imagination | math | spatial awareness | writing |

Label the brain! What do the different parts do?

- | | | |
|-----------------|--------------|----------------|
| cerebrum | cerebellum | parietal lobe |
| corpus callosum | brain stem | temporal lobe |
| cortex | frontal lobe | occipital lobe |



1. The average adult brain weighs about 3 pounds (1300-1400 grams). Like snowflakes, no two human brains are exactly alike, although they do have common structures and configurations.
2. Brain size doesn't equal intelligence. Someone with a five-pound brain would not necessarily be "smarter" than a person with a two-and-a-half-pound brain. Albert Einstein had a smaller than average brain, for instance. It's more a matter of circuits of brain cells operate. An elephant has a fifteen-pound brain, but few elephants have made significant scientific discoveries.
3. The brain is made up of many different structures. Like the Earth, the **cerebrum** (top part of the brain) is divided in two hemispheres. The word 'hemisphere' means 'half of a circle' in Latin. There are many interesting things to learn about the cerebral hemispheres. The left hemisphere controls the right side of the body, and the right hemisphere controls the left side of the body. While the hemispheres are similar in appearance, they are not identical and have different functions.
4. In most people, the left hemisphere is dominant for language, speech, writing, math, and logical reasoning. The right hemisphere is dominant for music, spatial awareness, art, intuitive thought, and imagination.
5. A curving bridge-shaped band of nerve fibers called the **corpus callosum** (which means 'body of hardness' in Latin) connects the two hemispheres. There are millions of nerve fibers in the adult human corpus callosum that send messages back and forth between the hemispheres. The nerve fibers in the corpus callosum allow the hemispheres to communicate with each other. Since the two hemispheres have different and complementary functions, it is important for them to communicate for the best mental performance.
6. The cerebral hemispheres are covered by tissue called the **cortex**, which controls movement, sensory processing, and thinking. The cortex (meaning 'bark' in Latin) is only about 2-3 mm thick. The surface of the brain is folded so that more tissue can fit inside the skull. If the cortex were ironed flat, it would be about the size of a pillowcase.
7. The structure that looks like a little brain underneath the hemispheres is called the **cerebellum**. The cerebellum helps to coordinate movement, balance, and thinking. Cerebellum means 'little brain in Latin.

8. In front of the cerebellum is the **brain stem**. The brain stem is a collection of different structures that connects the brain to the spinal cord. The brain stem is kind of the ‘automatic pilot of the brain. It helps regulate the autonomic nervous system, controlling functions like breathing, heartbeat, blinking, blood pressure, and the pupillary reflex.

9. In addition to being divided into hemispheres, the cerebrum can be divided into ‘lobes’ or sections. The front of the brain is called the ‘**frontal lobe**’ - You use your frontal lobe nearly every day. You use it to make decisions, such as what to eat or drink for breakfast in the morning, as well as for thinking or studying for a test. The frontal lobe is also where our personality is formed and where we can carry out higher mental processes such as planning. In addition, the frontal lobe is necessary to being able to speak language fluently.

10. The **parietal lobe** is in the upper back part of the brain. The parietal lobe is where information such as taste, temperature and touch are integrated, or processed. Humans would not be able to feel sensations of touch, if the parietal lobe was damaged.

11. The **temporal lobe** is in the bottom middle of the brain. It receives sensory information such as sounds and speech from the ears. It is also essential to being able to comprehend, or understand meaningful speech. In fact, we would not be able to understand someone talking to us, if it wasn't for the temporal lobe.

12. The **occipital lobe** is in the back of the brain. It receives sensory information such as sounds and speech from the ears. It is also key to being able to comprehend, or understand meaningful speech. In fact, we would not be able to understand someone talking to us, if it wasn't for the temporal lobe.