



PLTW Virtual Learning

Medical Detectives

Lesson 25

May 8, 2020



7 & 8 Grade Medical Detectives

Lesson: May 8, 2020

Objective/Learning Target:
Lesson 25, Part 3

Students will be able to identify parts of the human brain and what their function is.

Warm-Ups:

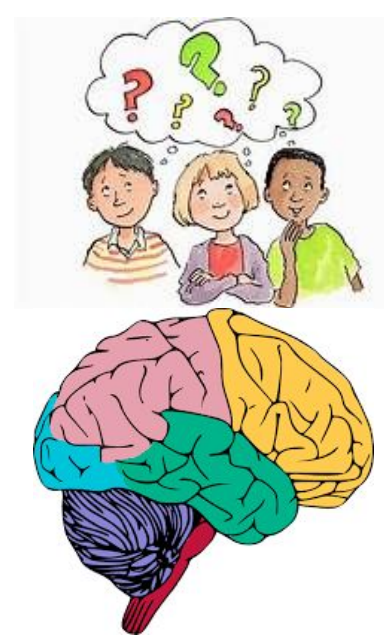
Watch the video and answer the questions below.

Warning! This video is not for the squeamish!

[Science for kids | Body Parts - THE HUMAN BRAIN](#)

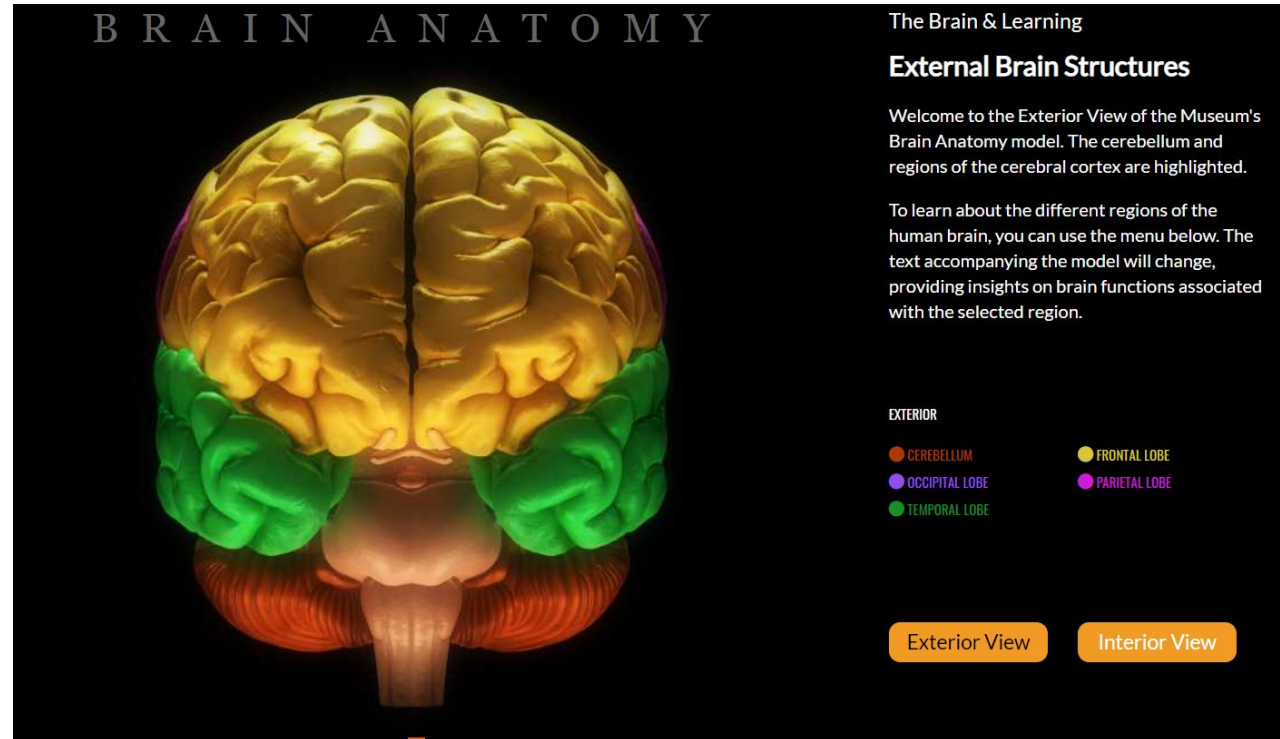
Questions:

1. How many calculations can the average human brain perform in 1 second? A) 1,000 B) 10,000, C) 100,000 D) 10,000,000,000,000,000,000,000
1. How much water makes up our brains? A) 30% B) 50% C) 75% D) 80%
2. Why is the brain all wrinkly looking?
3. What part of the brain does a memory backup every night while we're sleeping?



Lesson Introduction/Background Information:


Click the [Brain Anatomy link](#) and work through the virtual brain review. Click on the Exterior View button and then each of the parts of the brain. The location will be highlighted with the same color as the title and the explanation will appear in the right corner. Study both the Exterior view and Interior Views.



Practice:

Click on the [Atlas of the Brain Anatomy](#) and work through the virtual brain review. Click on the Anatomy Button to view different parts of the brain, both interior and exterior.



 **FINR** | Atlas of Brain Injury & Anatomy

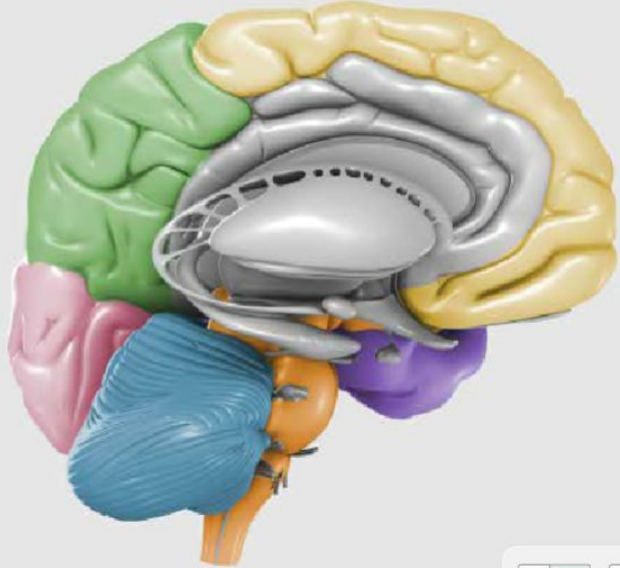
← → + ? Search

The Brain

The brain is the processing center of the nervous system. It interprets electrical signals from the body's nerve cells. It controls how we think, feel, act, communicate, perceive others, remember and dream. It keeps the body alive. It coordinates the body's actions — voluntary and involuntary.

The brain contains an average of 100 billion nerve cells (neurons) and from 10–50 times more glial cells. They support neurons — physically and nutritionally — and perform housekeeping tasks.

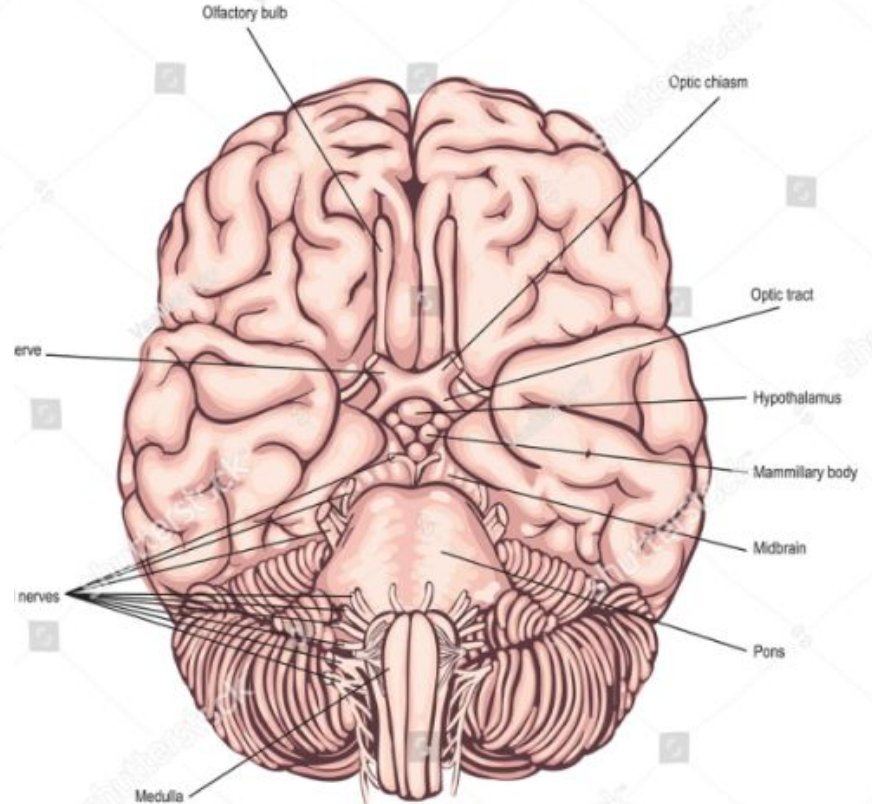
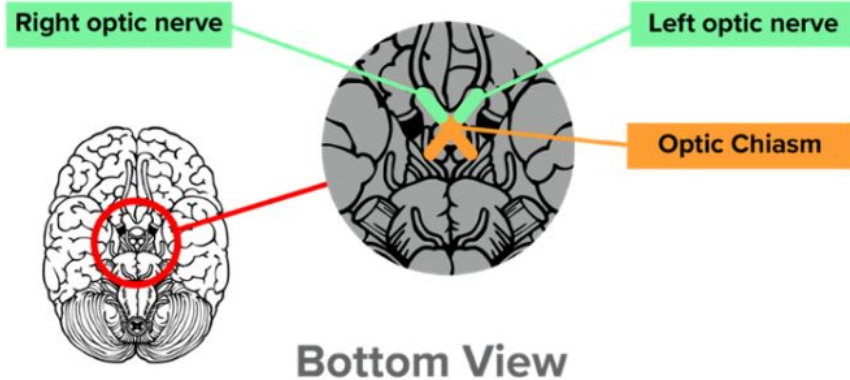
Neurons secrete chemicals called neurotransmitters. These chemicals transmit information (signals) across the gap between neurons and from neurons to other cells. Dopamine, histamine and serotonin are examples of



Labels: OFF
Rotate: OFF

Practice:

The Underside of the Human Brain



Self Assessment: Definitions

Occipital lobe: This is found in the back of the brain. The area is involved with the brain's ability to recognise objects. It is responsible for our vision.

Temporal lobe: The temporal lobes are found on either side of the brain and just above the ears. The temporal lobes are responsible for hearing, memory, meaning, and language. They also play a role in emotion and learning. The temporal lobes are concerned with interpreting and processing auditory stimuli.

Parietal lobe: The parietal lobes are found behind the frontal lobes, above the temporal lobes, and at the top back of the brain. They are connected with the processing of nerve impulses related to the senses, such as touch, pain, taste, pressure, and temperature. They also have language functions.

Frontal lobe: It is concerned with emotions, reasoning, planning, movement, and parts of speech. It is also involved in purposeful acts such as creativity, judgment, and problem solving, and planning

Cerebral cortex: The cerebral cortex controls your thinking, voluntary movements, language, reasoning, and perception. In higher mammals the cortex looks like it has lots of wrinkles, grooves and bumps.

Cerebellum: controls your movement, balance, posture, and coordination. New research has also linked it to thinking, novelty, and emotions. *The limbic system*, often referred to as the "emotional brain", is found buried within the cerebrum.

Hypothalamus: controls your body temperature, emotions, hunger, thirst, appetite, digestion and sleep. The hypothalamus is composed of several different areas and is located at the base of the brain. It is only the size of a pea (about 1/300 of the total brain weight), but is responsible for some very important behaviours.

Thalamus: controls your sensory integration and motor integration. Receives sensory information and relays it to the cerebral cortex. The cerebral cortex also sends information to the thalamus which then transmits this information to other parts of the brain and the brain stem..

Pituitary gland: it controls your hormones and it helps to turn food to energy. Without this gland you could eat but you wouldn't get any energy from the food.

Self Assessment: Take the Brain Function Quiz

1. Responsible for the conscious perception of visual input. _____
2. Responsible for the conscious perception of sound. _____
3. Responsible for sensing touch, spatial processing language and memory. _____
4. Receive visual stimuli from the eyes and relay the information to the visual cortex in the occipital lobe.

1. Responsible for the voluntary control of your skeletal muscles, the muscles we can move and control. _____
2. Controls body temperature, thirst, appetite, sleep patterns and other processes in or odies that happen automatically. _____
3. Broad brand of nerve fibers that connect the left and right cerebral hemispheres. _____
4. Carries messages from the sensory organs like the eyes, ears, nose and fingers to the cerebrum. _____

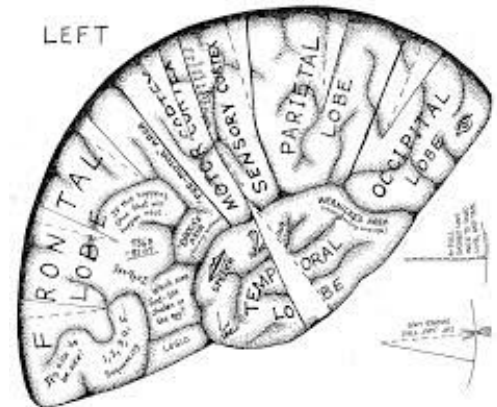
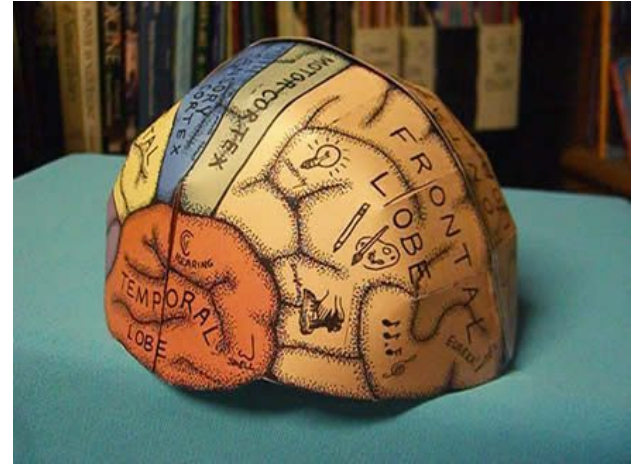
WORD BANK -- Optic Nerve and Chiasm, Visual Cortex, Auditory Cortex, Parietal Lobes, Motor Cortex, Hypothalamus, Corpus Callosum, Thalamus

Extend Your Learning/Continued Practice:

Here's your chance to create a [BRAIN HAT](#).

-Print only **one set** (a left hemisphere and a right hemisphere; there are multiple sizes) and color the sections.

-Take a picture to share how it turns out.



Answer Key:

Self Assessment Brain Function Quiz

1. Optic Nerve & Chiasm
2. Auditory Cortex
3. Parietal Lobe
4. Visual Cortex
5. Motor Cortex
6. Hypothalamus
7. Corpus Callosum
8. Thalamus

