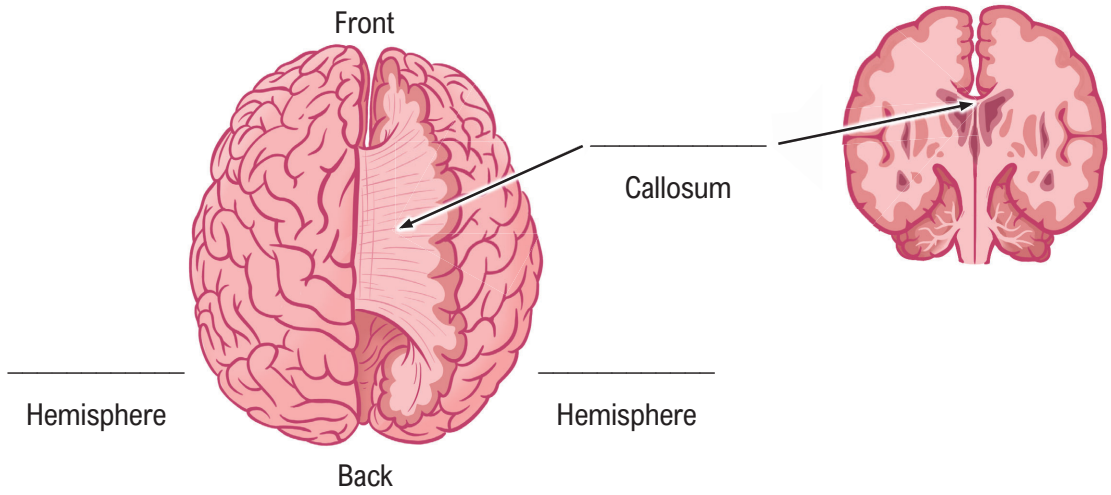
TOPIC: THE CORTICAL FOREBRAIN

The Cerebrum

- The largest part of the brain; consists of ____ hemispheres.
- The hemispheres are connected by a bridge of fibers called the **corpus** _____.
  - Relays information between the hemispheres.
- **Hemispheric Specialization**: Phenomenon of each hemisphere being _____ for certain functions.
- **Contralateral Control**: Each hemisphere controls the _____ side of the body.



EXAMPLE

Based on what we know about hemispheric specialization and contralateral control, determine if the left or right hemisphere would be more active for each action listed below.

- Learning a new language: Left / Right
- Kicking a soccer ball with your left leg: Left / Right
- Painting a landscape: Left / Right
- Squinting through a keyhole with your right eye: Left / Right

PRACTICE

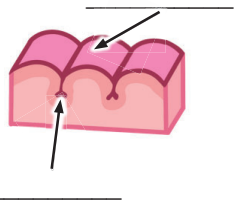
One treatment for severe epilepsy is to surgically sever the connection between the hemispheres of the cerebrum. What structure is severed in this procedure?

a) Corpus callosum.
b) Pons.
c) Cerebral cortex.
d) Midbrain.

TOPIC: THE CORTICAL FOREBRAIN

The Cerebral Cortex

- **Cerebral Cortex**: The _____ layer of the cerebrum.
- Features prominent grooves and ridges, giving the brain its "wrinkled" appearance. Includes:
  - **Gyri** (singular: gyrus): _____ ridges of tissue on the surface of the brain.
  - **Sulci** (singular: sulcus): Shallow _____ of tissue that separate gyri.
- The cerebral cortex is divided into ___ lobes:



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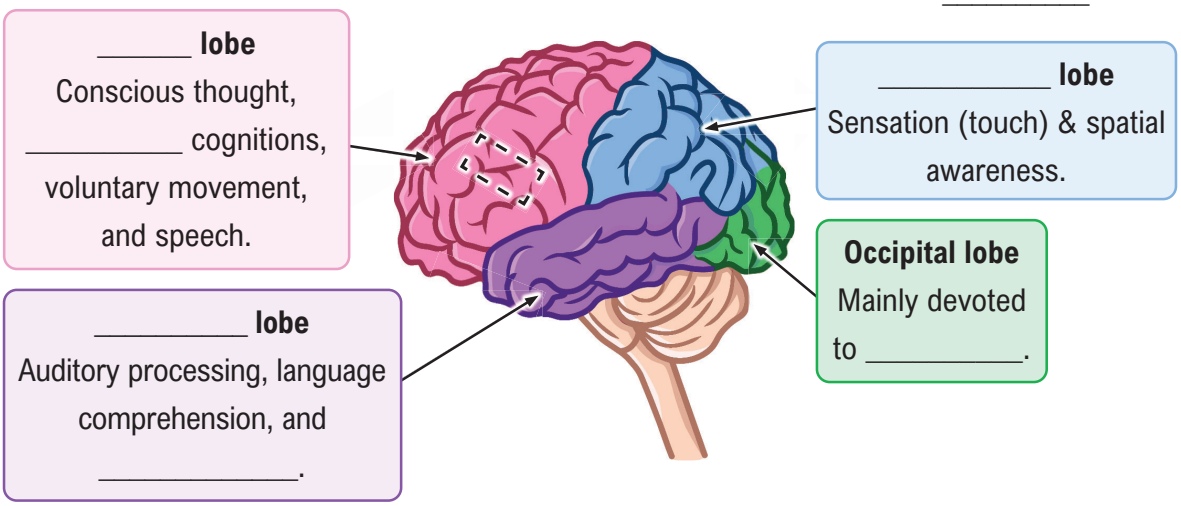


EXAMPLE

In a few words, why are gyri and sulci important?

_____

_____

PRACTICE

A gyrus is a(n) _____ while a sulcus is a(n) _____.

a) Groove: elevated ridge.

b) Elevated ridge: groove.

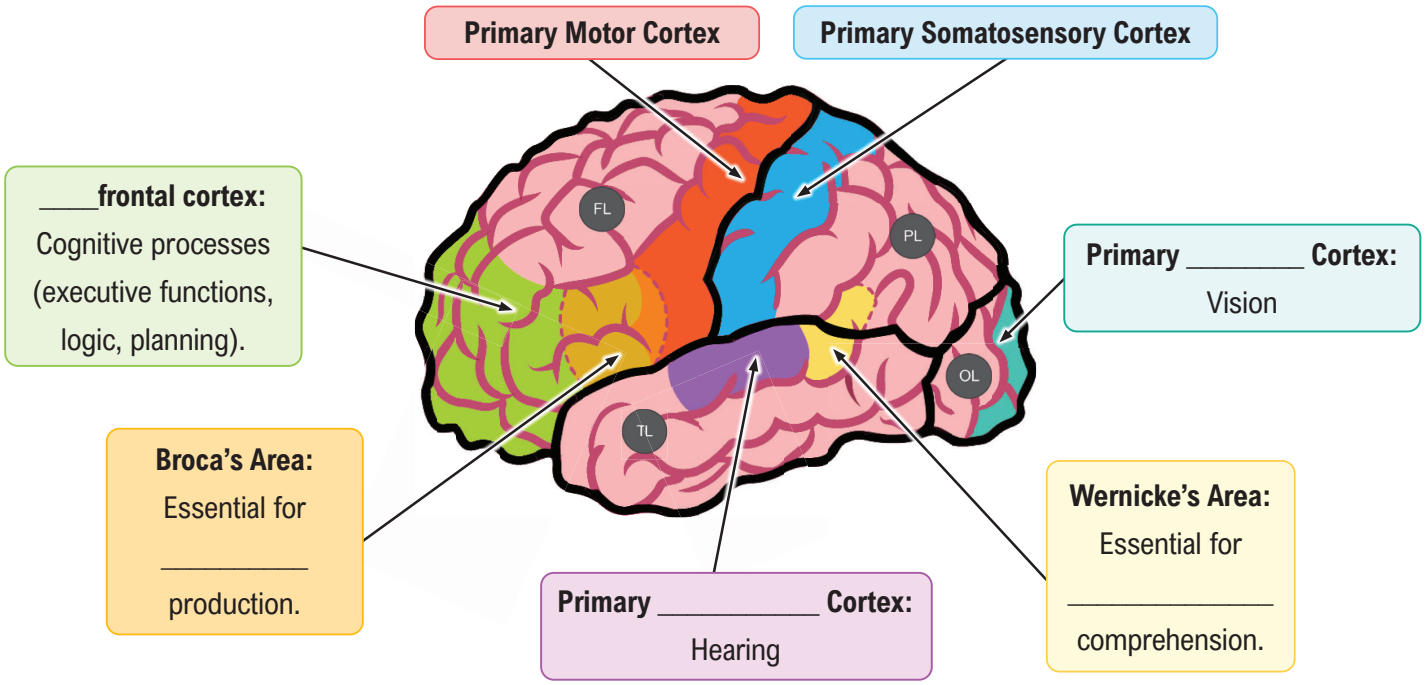
c) Lobe: elevated ridge.

d) Elevated ridge: lobe.

TOPIC: THE CORTICAL FOREBRAIN

Important Regions In The Lobes

◆ Below are a few important brain regions you should be able to identify:



EXAMPLE

A stroke is a medical emergency where blood flow to the brain is blocked. Imagine you are a neurologist treating stroke patients. You have four patients, and each has had a stroke in a different lobe. For each patient, write one function that may be impacted because of the stroke in that region.

Patient	Stroke Location	Impaired Function
Patient A	Occipital	
Patient B	Frontal	
Patient C	Temporal	
Patient D	Parietal	

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PRACTICE

Broca's area is responsible for _____, while Wernicke's area is responsible for _____.

a) Language comprehension: speech production.

b) Executive functions: auditory processing.

c) Speech production: language comprehension.

d) Auditory processing: executive functions.

PRACTICE

The primary auditory cortex is located in the _____ lobe.

a) Frontal

b) Parietal

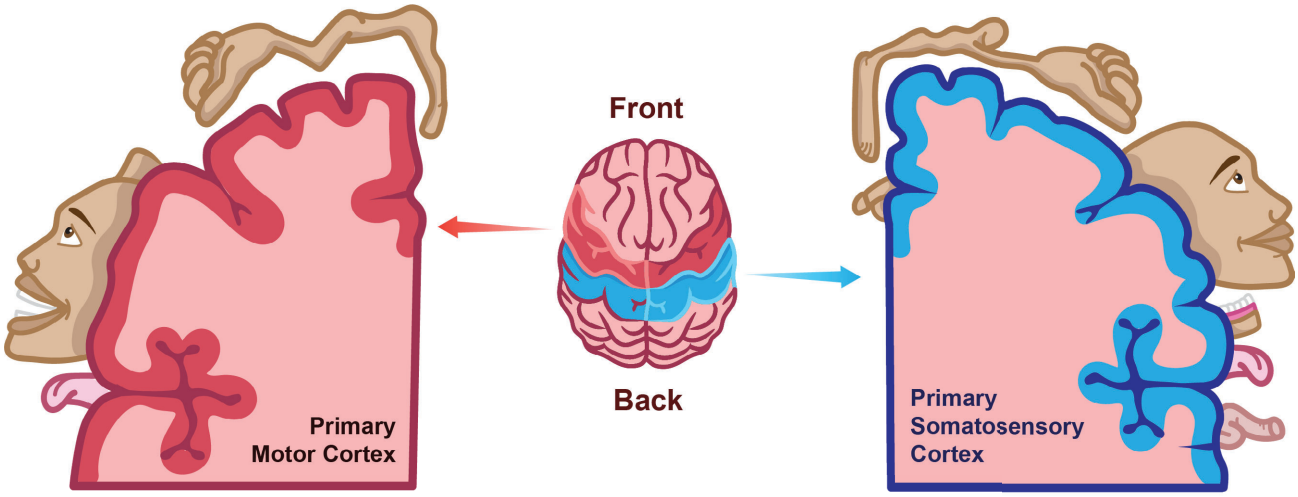
c) Temporal

d) Occipital

TOPIC: THE CORTICAL FOREBRAIN

The Sensory and Motor Cortices

- **Primary Motor Cortex**: Responsible for initiating _____ movements.
- **Primary Somatosensory Cortex**: Processes sensory information related to touch, temperature, and proprioception.
- **Homunculus**: Size of body parts is proportionate to _____ of neural connections.



Larger area on motor homunculus = more _____ control.

Larger area on sensory homunculus = more _____.

EXAMPLE

For the following situations, write an "M" if the situation would be processed by the primary motor cortex, and write an "S" if the situation would be processed by the primary somatosensory cortex.

a. A feather is brushed across your face: _____

b. You slip a ring off your finger: _____

c. You notice that you have a stomach ache: _____

d. You stir a pot of soup: _____

e. You feel the heat of a fire: _____

PRACTICE

Within the homunculus, what does a larger area on the primary motor cortex correspond to?

a) More motor control for that body part.

b) Less motor control for that body part.

c) More sensation for that body part.

d) Less sensation for that body part.