

Central

Nervous

System

# Main function

- Process information received through the sensory systems & other parts of the body
- activates appropriate actions in response

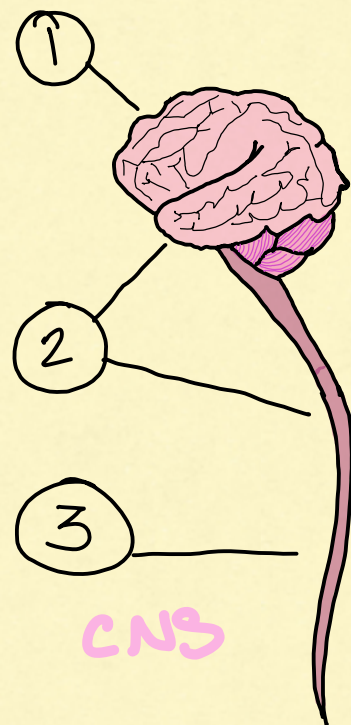
# Communication

- Conveys messages to the peripheral nervous system sending messages back up through the spinal cord up to the brain for processing

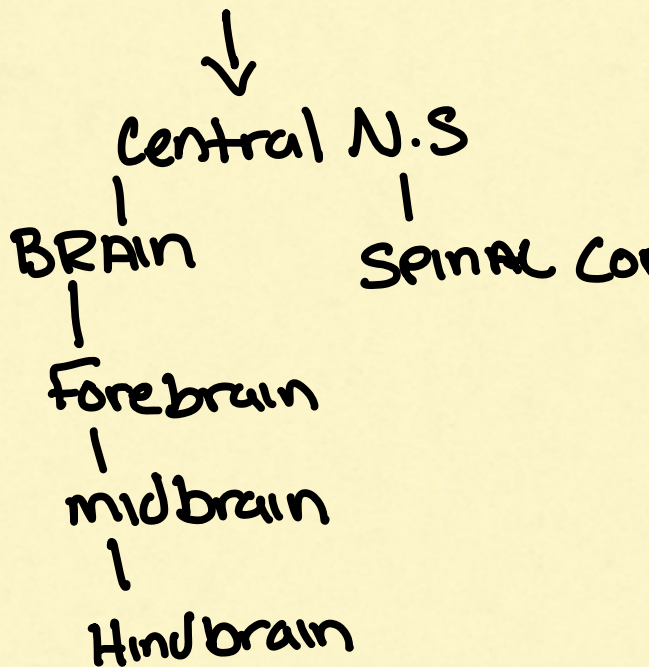
# The 2 Divisions of The CNS

1. Brain
2. Spinal cord

1. Brain
2. Central Nervous System
3. Spinal cord



# The Nervous System



# The Brain

- Intricate network of cells
- Processing information received through neural pathways from the body
- Has the responsibility to direct responses

## • Corpus callosum

- ↳ A thick band of neural fibers that connect the left & right hemisphere
- ↳ Allows the 2 hemispheres to communicate

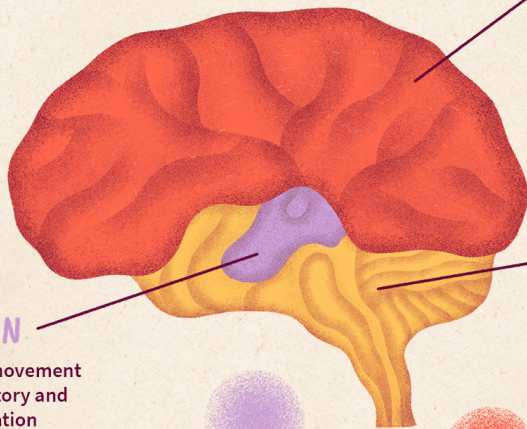
INFORMATION



REACTION



# THE MAJOR DIVISIONS OF THE BRAIN



## FOREBRAIN

Processes sensory information, helps with reasoning and problem-solving, and regulates autonomic, endocrine, and motor functions

- Forebrain -
- ↳ contains the cerebral cortex & other structures that lie beneath the cortex
  - ↳ Subcortical structures
    - thalamus
    - hypothalamus
    - pituitary gland
    - limbic system
  - ↳ Cerebral Cortex: associated w/ higher lvl processes such as
    - consciousness
    - thought
    - emotion
    - reasoning
    - language
    - memory
  - ↳ motor cortex
    - ↳ planning & coordinating movement
  - ↳ Pre-frontal Cortex
    - ↳ higher-level cognitive functioning
  - ↳ Broca's area
    - ↳ essential for language production
    - ↳ Damage = great difficulty producing language of any form
  - Included in
    - ↳ motor control
    - ↳ emotion
    - ↳ language

## MIDBRAIN

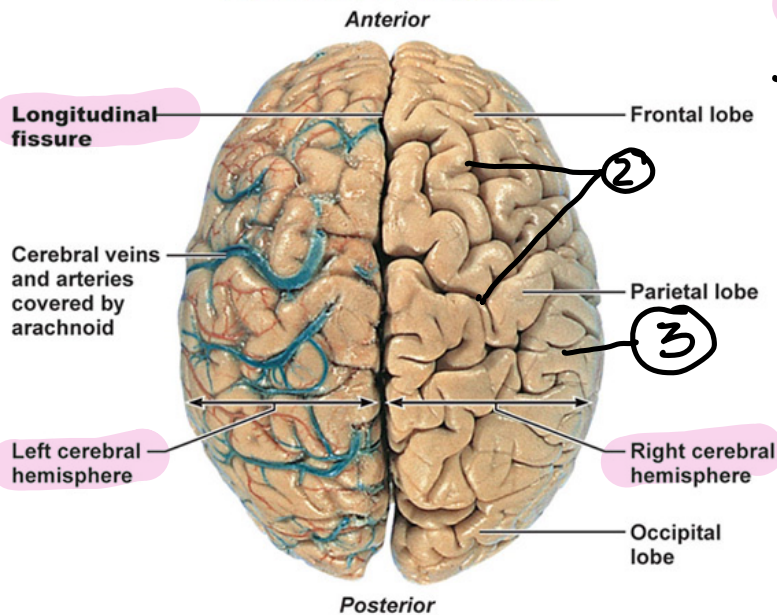
Helps to regulate movement and process auditory and visual information

## HINDBRAIN

Helps to regulate autonomic functions, relay sensory information, coordinate movement, and maintain balance and equilibrium

ThoughtCo.

## Cerebral Hemispheres



(a) Superior view

**Lft hemisphere -**  
- controls the right half of the body

**RIGHT hemisphere -**  
- controls the left half of the body

①

**Cerebral Cortex**

↳ surface of brain

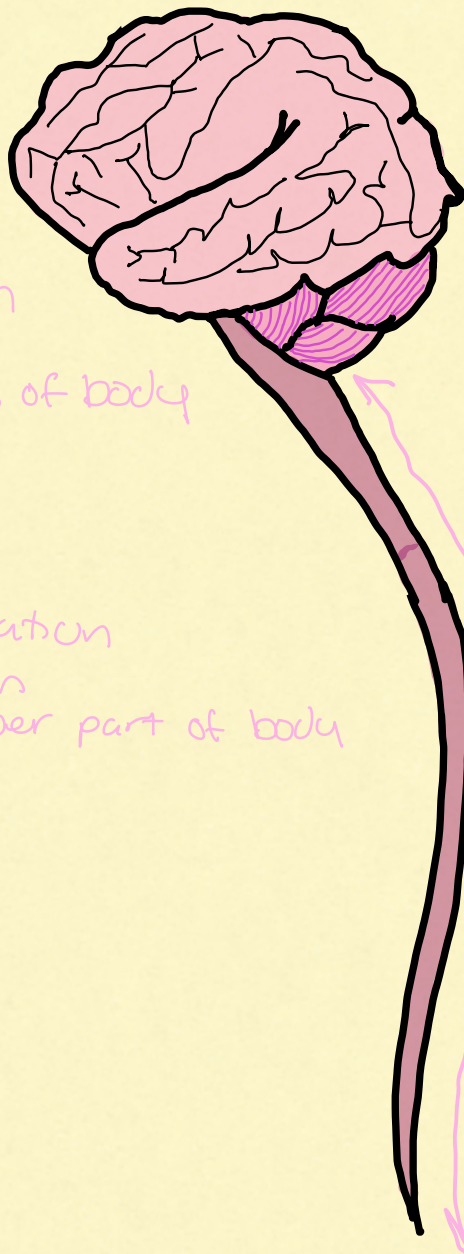
**Gyri**

↳ distinctive pattern of folds or bumps

③ **Sulci**

↳ grooves

# Spinal Cord



- Upper section responsible

- Communication
  - brain
  - upper parts of body

- Lower section responsible

- Communication
  - brain
  - lower part of body

- long, thin bundle of nerve tissue

- links the brain & peripheral nervous system

# Somatic Nervous System

- Associated w/ activities that are conscious or voluntary
- Involved in the relay of sensory & motor information to & from the CNS
- **Efferent fibers** ("moving away from")
  - ↳ Motor neurons carrying instructions from CNS to the muscles
- **Afferent Fibers** ("moving towards")
  - ↳ Sensory neurons, carrying sensory info. to CNS

afferent = arrive

efferent = exit

A nerve = bundle of neurons

## Autonomic nervous system

↳ Controls

- Internal organs
- Glands

↳ outside the realm of voluntary control

Autonomic N.S.  
subdivided

## Sympathetic Nervous System

↳ involved in preparing the body for stress-related activities

## Parasympathetic Nervous System

↳ associated w/ returning the body to routine, day-to-day operations