

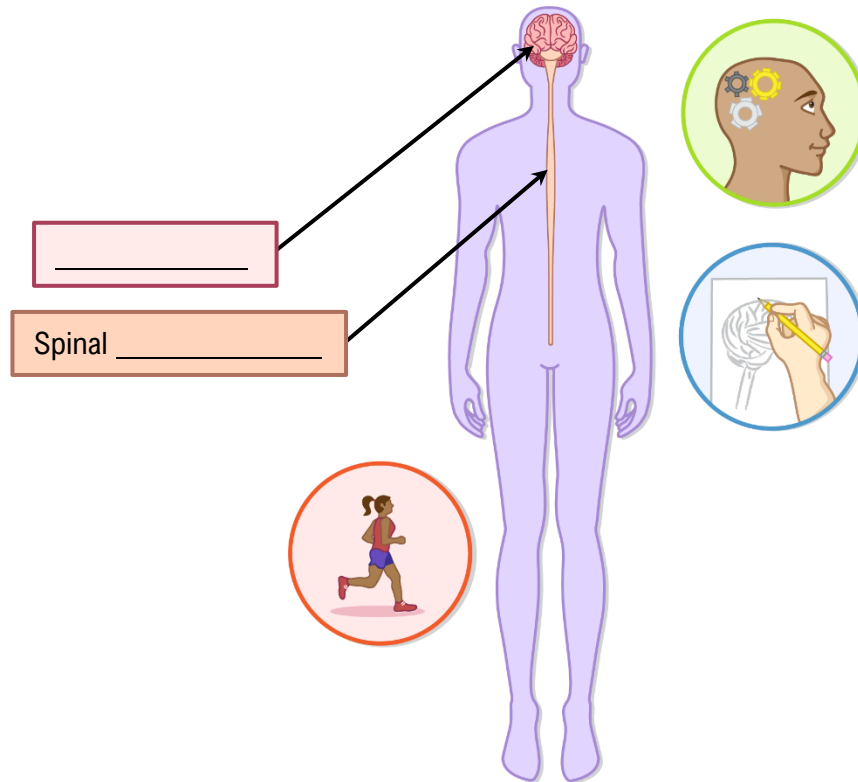
TOPIC: INTRODUCTION TO THE CENTRAL NERVOUS SYSTEM

- The central nervous system (CNS) consists of _____ components:

1) The _____ 2) The _____ cord

- The CNS functions as the _____ center for the human body.

- Responsible for almost everything we do, think, and feel.



PRACTICE: Which of the following actions does the central nervous system play a role in?

- a) Trying to remember the answer to an anatomy and physiology question.
- b) Coordinating your skeletal muscles to catch and throw a ball.
- c) Deciding what you want to have for dinner.
- d) All of the above.

TOPIC: INTRODUCTION TO THE CENTRAL NERVOUS SYSTEM

Major Regions of the Brain

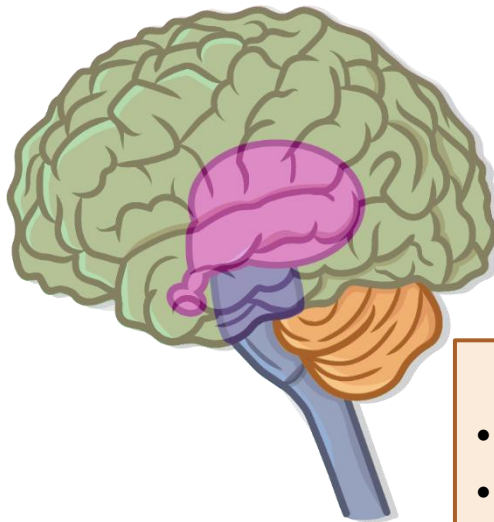
- The adult brain can be divided into _____ major regions:

1) _____

- Largest, most anterior part of the brain.

3) _____

- Connects cerebrum to _____ cord.
- **Consists of** midbrain, pons, & medulla oblongata.



2) **Diencephalon**

- Central part of the forebrain
- **Consists of** _____, hypothalamus, epithalamus.

4) _____

- Structure at the back of the brain.
- Coordinates _____ activity.

EXAMPLE: George just found out that he has a small glioma on his midbrain. In other words, he has a glioma on his _____.

- a) Cerebrum.
- b) Diencephalon.
- c) Brainstem.
- d) Cerebellum.

PRACTICE: The diencephalon is _____ to the brainstem and _____ to the cerebellum.

- a) Superior, posterior.
- b) Superior, anterior.
- c) Inferior, anterior.
- d) Anterior, posterior.

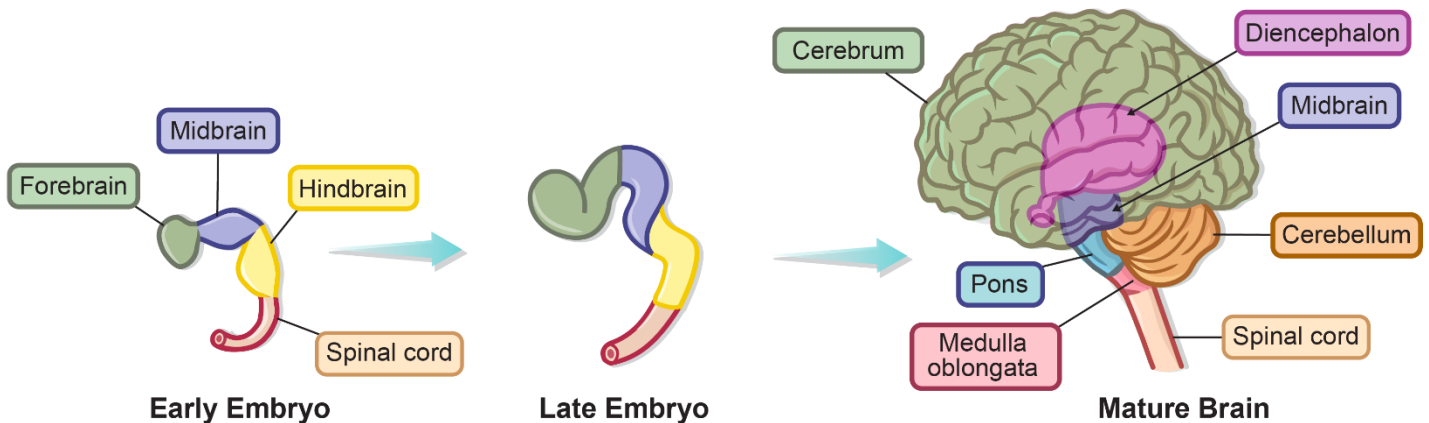
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CNS Development

Note: *encephalo* = brain

- _____ tube: embryonic structure that becomes the CNS.
 - Anterior end expands to form 3 constrictions that mark off the _____ primary brain vesicles.
 - The caudal (inferior) end of the neural tube becomes the _____.

Primary Brain Vesicles



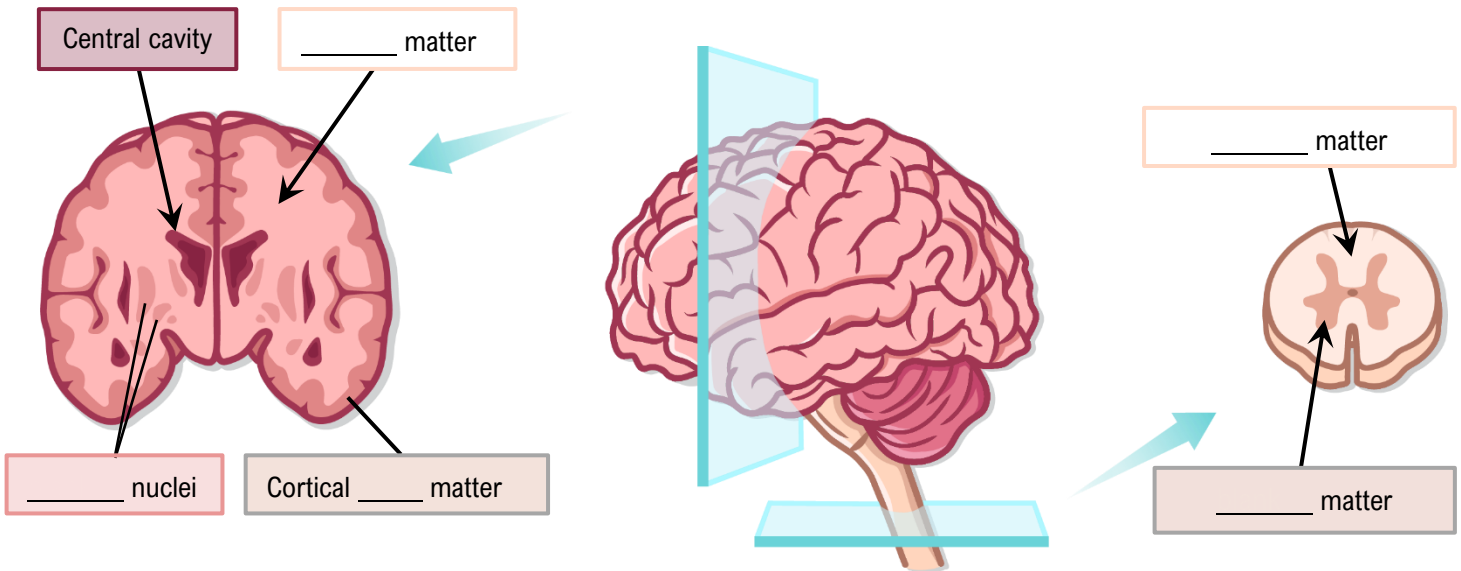
EXAMPLE: Throughout fetal development, the prosencephalon becomes the _____ and the _____.

- Midbrain and cerebellum
- Cerebrum and cerebellum
- Cerebrum and diencephalon
- Diencephalon and midbrain

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White & Gray Matter

- Nervous tissue making up the brain & spinal cord is composed of ____ types of matter:
 1. **White matter:** mostly myelinated _____.
 2. **Gray matter:** Neuron _____ bodies, dendrites, and nonmyelinated axons.
- **Brain:** Outer layer of gray matter known as the _____; inner layer of white matter.
 - Subcortical clusters of gray matter called _____ nuclei.
- **Spinal Cord:** Outer layer of white matter; inner gray matter.



EXAMPLE: Given that white matter contains more myelinated axons than gray matter, which of these statements about white matter is true?

- a) White matter is optimized for transferring signals rapidly throughout the CNS.
- b) White matter is optimized for processing incoming visual and auditory signals.
- c) White matter is responsible for “decision-making” processes in the brain.
- d) White matter is responsible for storing information in the brain.

PRACTICE: Neil says that all cortical areas of the brain are found around the outer edge (or surface) of the brain. Is he correct?

- a) No; all cortical areas are found in the central area of the brain.
- b) No; some cortical areas are found around the outer edges and some are found in the center of the brain.
- c) Yes; the cortex is the brain’s outermost layer, composed of gray matter.