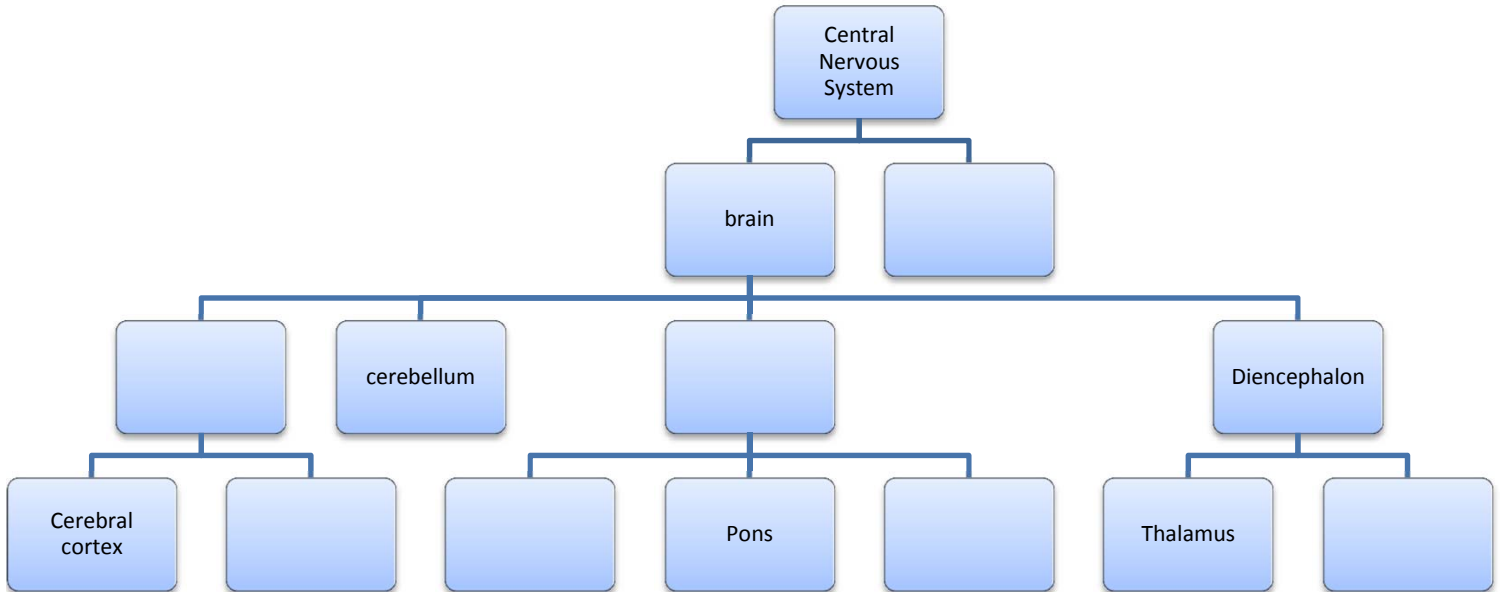


## Central Nervous System and Peripheral Nervous System Honors Anatomy

### Central Nervous System

#### Organization of the Central Nervous System

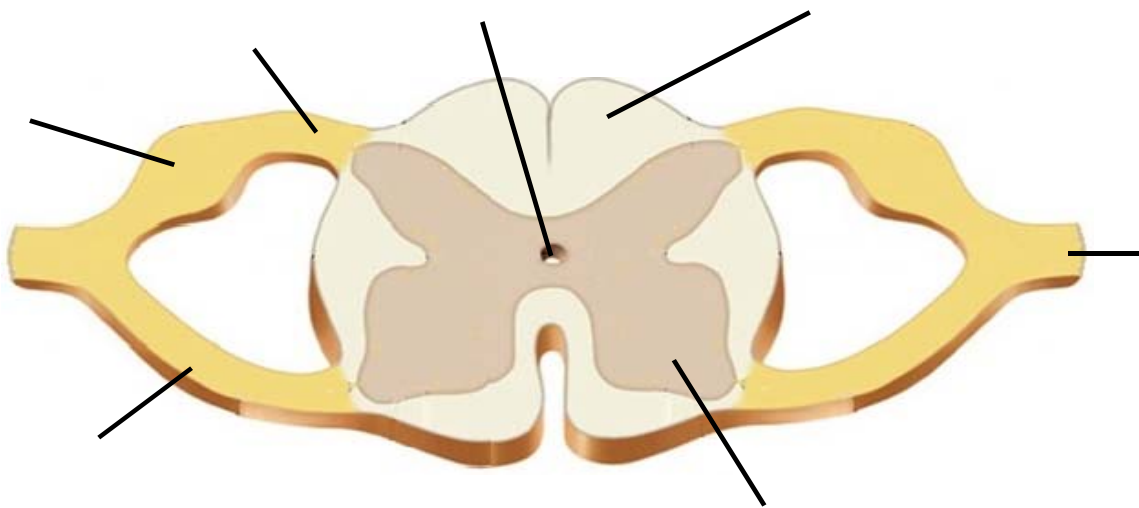
Finish filling in the tree map illustrating the organization of the central nervous system.



- |            |                 |                   |             |
|------------|-----------------|-------------------|-------------|
| Brain      | Cerebral cortex | Diencephalon      | Midbrain    |
| Brain stem | Cerebrum        | Hypothalamus      | Pons        |
| Cerebellum | Corpus callosum | Medulla oblongata | Spinal cord |
|            |                 |                   | Thalamus    |

### Spinal Cord

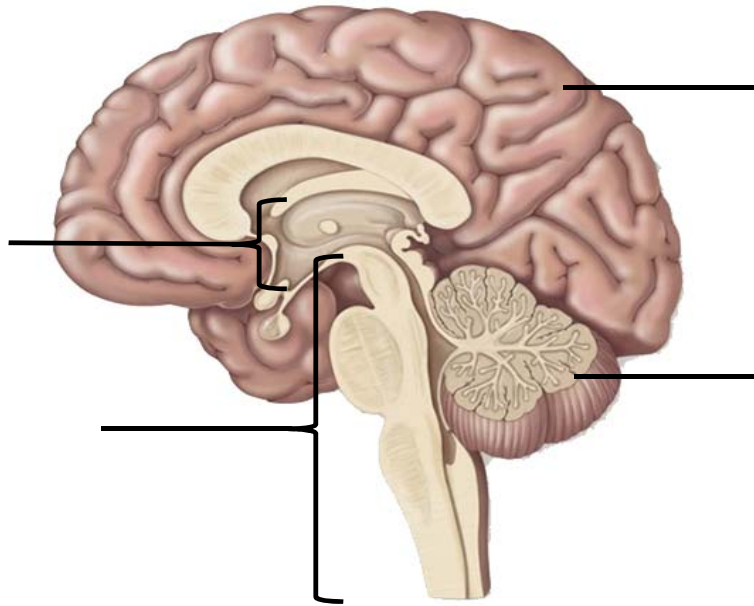
Using the list below, label the different parts of the spinal cord.



- |               |                      |              |
|---------------|----------------------|--------------|
| Central canal | Dorsal root ganglion | White matter |
| Dorsal root   | Gray matter          | Ventral root |
|               | Spinal nerve         |              |

## Brain

Using the list below, label the 4 main portions of the human brain.



brain stem

cerebellum

cerebrum

diencephalon

## Brainstem

Match the areas of the brain stem to their functions.

- \_\_\_\_\_ 8. Medulla oblongata
- \_\_\_\_\_ 9. Midbrain
- \_\_\_\_\_ 10. Pons

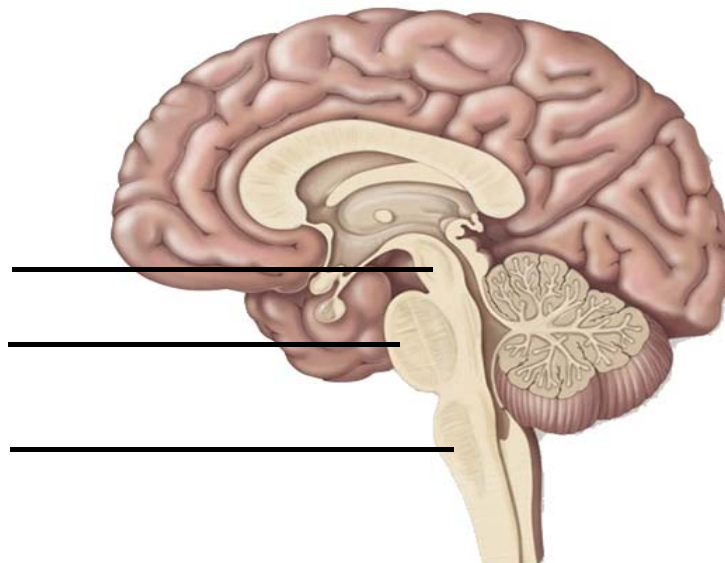
- A. Relay between the cerebrum and spinal cord or cerebellum; contains reflex centers for visual, auditory, and tactile responses.
- B. Contains bundles of axons traveling between the cerebellum and the rest of the central nervous system; helps regulate breathing rate and has reflex centers for head movements in response to visual and auditory stimuli.
- C. Contains tracts between the spinal cord and higher brain centers; contains reflex centers for regulating heartbeat, breathing, and vasoconstriction.

Using the list below, color and label the 3 parts of the brainstem.

Medulla oblongata

Midbrain

Pons



## Cerebellum

11. The cerebellum controls balance, muscle tone, and coordination of fine \_\_\_\_\_ movements.

**\*\*Refer to the diagram of the 4 major parts of the brain for the location of the cerebellum.**

## Diencephalon

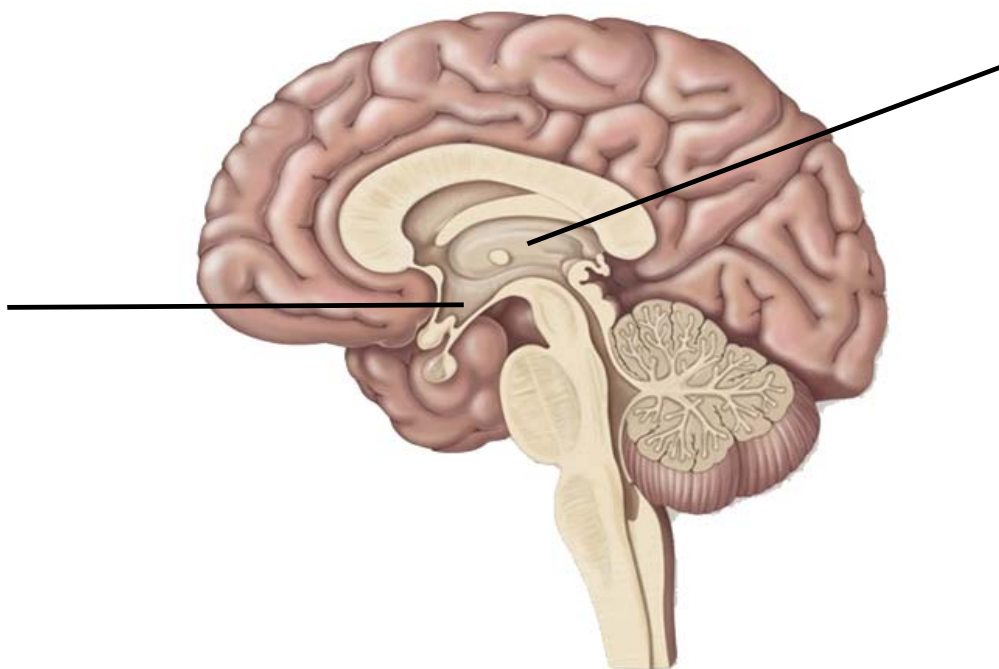
12. The \_\_\_\_\_ is the part of the diencephalon that influences mood, registers perception of pain, and acts as a relay between the brainstem and cerebral cortex.

13. The \_\_\_\_\_ is the part of the diencephalon that maintains homeostasis, regulates hunger, body temperature, and water balance.

**Using the list below, label the parts of the diencephalon.**

Hypothalamus

Thalamus



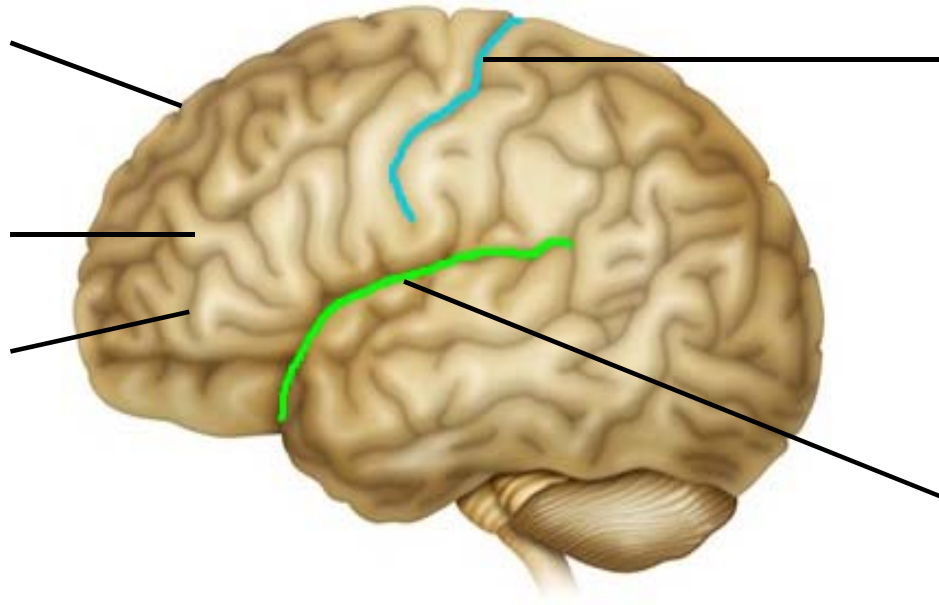
## Cerebrum

**Match the structures of the cerebrum with their description or function.**

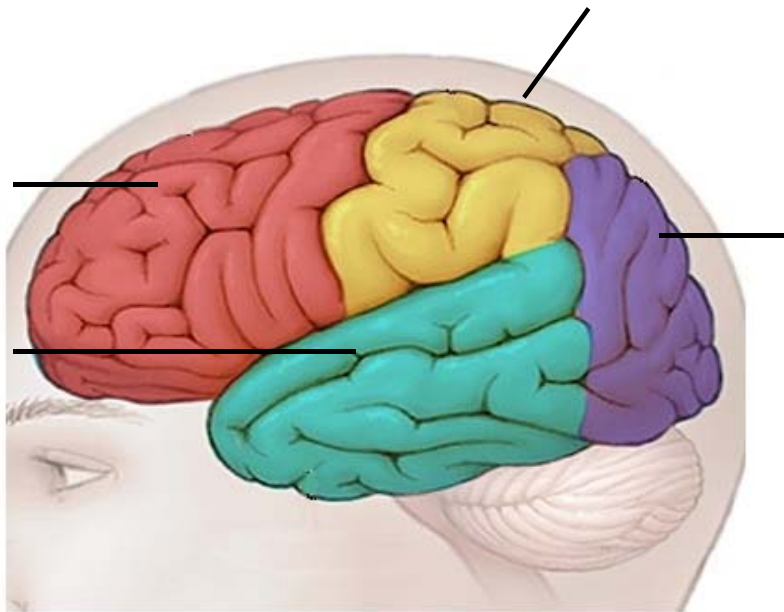
- |                                |  |
|--------------------------------|--|
| _____ 14. Central sulcus       | A. A thin highly convoluted outer layer of gray matter.                                    |
| _____ 15. Cerebral cortex      | B. Shallow grooves.  |
| _____ 16. Cerebral hemispheres | C. A bridge or band of white matter that connects the right and left cerebral hemispheres. |
| _____ 17. Corpus callosum      | D. The deep groove that divides the left and right cerebral hemispheres.                   |
| _____ 18. Gyrus                | E. The groove that separates the frontal and parietal lobes.                               |
| _____ 19. Lateral sulcus       | F. The two halves of the cerebrum.   |
| _____ 20. Longitudinal fissure | G. The groove that separates the temporal lobe from the frontal and parietal lobes.        |
| _____ 21. Sulcus               | H. Convolutions.   |

Using the list below, label the outer structures of the cerebrum.

- Central sulcus
- Cerebral cortex
- Gyrus
- Lateral sulcus
- Sulcus



Using the list below, label the lobes of the cerebrum.



Frontal lobe

Occipital lobe

Parietal lobe

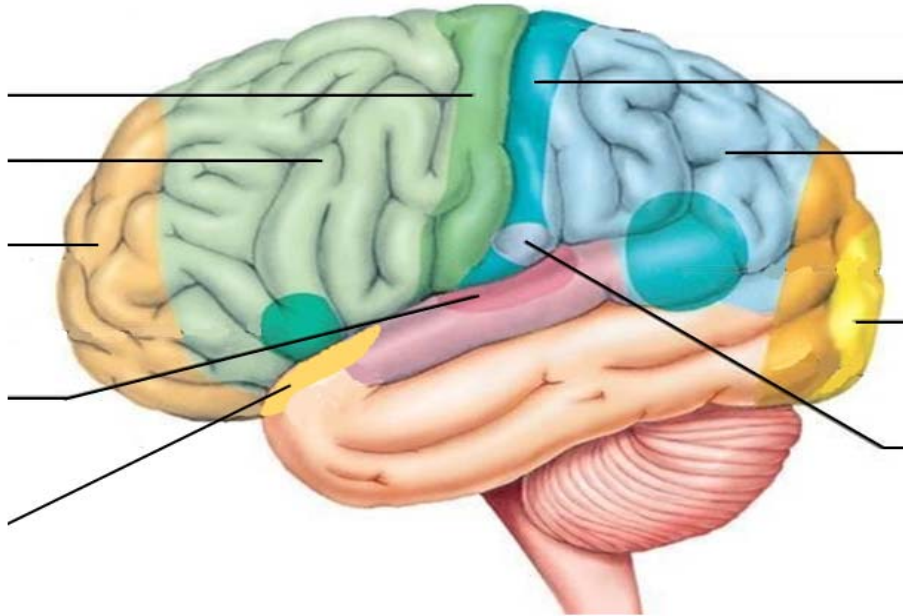
Temporal lobe

Match the motor and sensory areas of the cortex with their function.

- \_\_\_\_\_ 22. Auditory cortex
- \_\_\_\_\_ 23. Olfactory cortex
- \_\_\_\_\_ 24. Prefrontal area
- \_\_\_\_\_ 25. Premotor cortex
- \_\_\_\_\_ 26. Primary motor cortex
- \_\_\_\_\_ 27. Primary somatosensory cortex
- \_\_\_\_\_ 28. Somatosensory association cortex
- \_\_\_\_\_ 29. Taste cortex
- \_\_\_\_\_ 30. Visual cortex

- A. Sense of sight.
- B. Organizes motor functions for skilled motor activities.
- C. Sense of taste.
- D. Sense of touch- pain, temperature, pressure.
- E. Sense of smell.
- F. Sense of hearing.
- G. Creates the voluntary commands for skeletal muscle actions.
- H. Processes and recognizes sensory information from the body.
- I. Involved in motivation and regulation of emotional behavior and mood.

Using the diagram and the list below, label the different motor and sensory cortices.

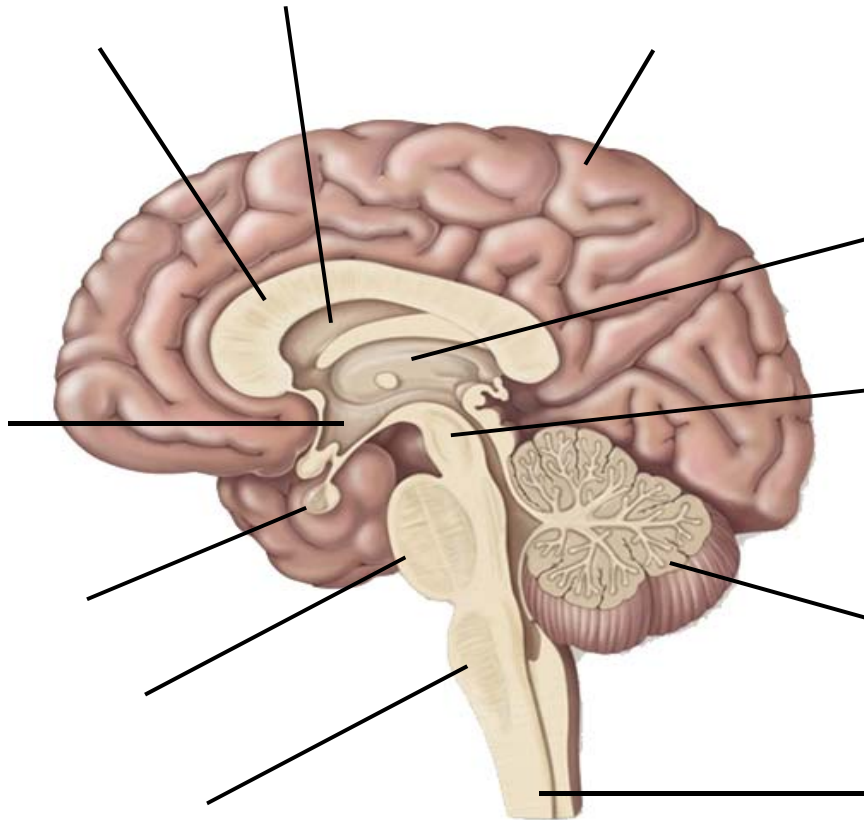


Auditory cortex  
Olfactory cortex  
Prefrontal cortex

Premotor cortex  
Primary motor cortex  
Primary somatosensory cortex

Somatosensory association cortex  
Taste cortex  
Visual cortex

Using the list below, color and label the different parts of the midsagittal brain.



cerebellum  
cerebrum  
corpus callosum

hypothalamus  
lateral ventricle

medulla oblongata  
midbrain

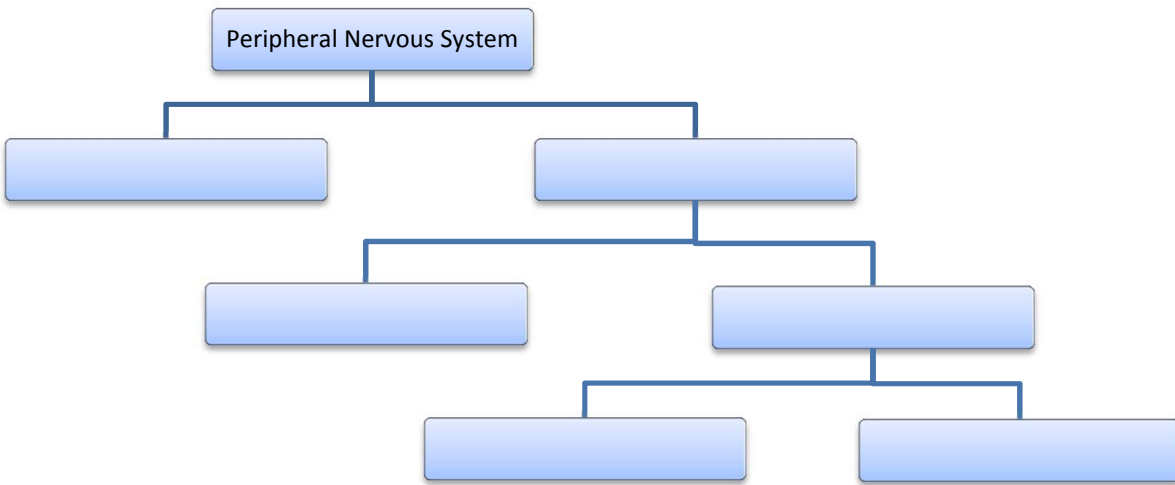
pituitary gland  
pons

spinal cord  
thalamus

## Peripheral Nervous System

### Organization of the Peripheral Nervous System

Finish filling in the tree map illustrating the organization of the central nervous system.



### Nerves

1. \_\_\_\_\_ are bundles of myelinated axons of neurons that can either be \_\_\_\_\_ neurons or \_\_\_\_\_ neurons or mixed.
2. List the 2 types of nerves found in the nervous system.  
\_\_\_\_\_

### Types of Nerves

#### Cranial Nerves

There are 12 pairs of cranial nerves. For this class we will only focus on the cranial nerves associated with the special senses.

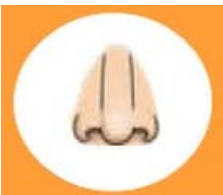
Write in the correct cranial nerve(s) that is associated with each image of a special sense.



Cranial nerve(s):



Cranial nerve(s):



Cranial nerve(s):



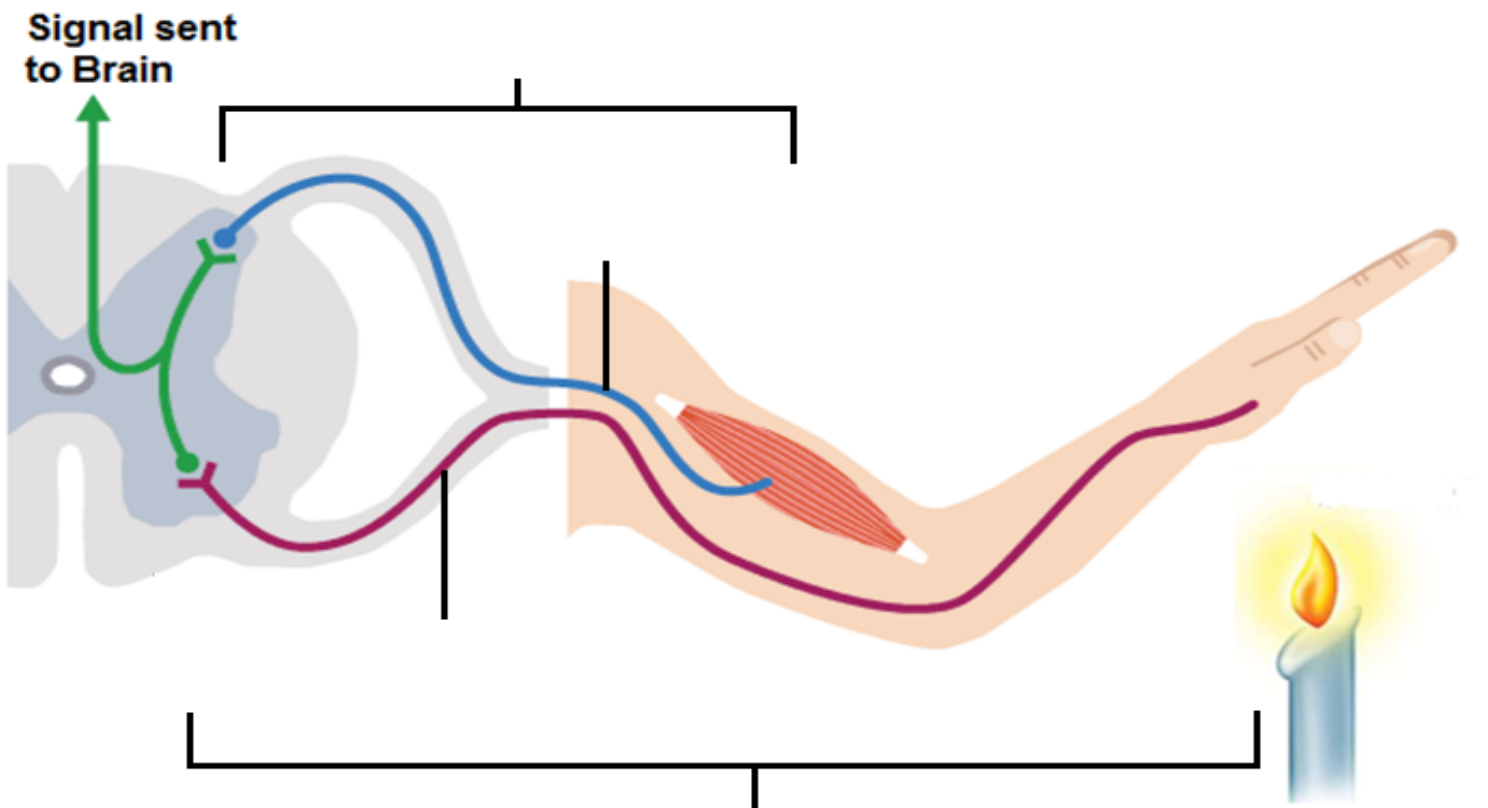
Cranial nerve(s):

**Match the cranial nerves to their functions.**

- |          |                          |    |   |
|----------|--------------------------|----|---|
| _____ 3. | Olfactory (I)            | A. | Sense of taste anterior tongue; controls facial muscles and glands  |
| _____ 4. | Optic (II)               | B. | Sensory information from sense of sight   |
| _____ 5. | Facial (VII)             | C. | Sensory information from sense of balance and hearing   |
| _____ 6. | Vestibulocochlear (VIII) | D. | Sense of taste posterior tongue; sensory information from pharynx; controls pharyngeal muscles for swallowing |
| _____ 7. | Glossopharyngeal (IX)    | E. | Sensory information from sense of smell   |

**Divisions of the Peripheral Nervous System**

Using the list below, label the divisions of the peripheral nervous system and their parts.



**Sensory Division**

8. Describe the direction an action potential in the ~~peripheral nervous system~~ travels.

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**Motor Division**

9. Describe the direction an action potential in the ~~central nervous system~~ travels.

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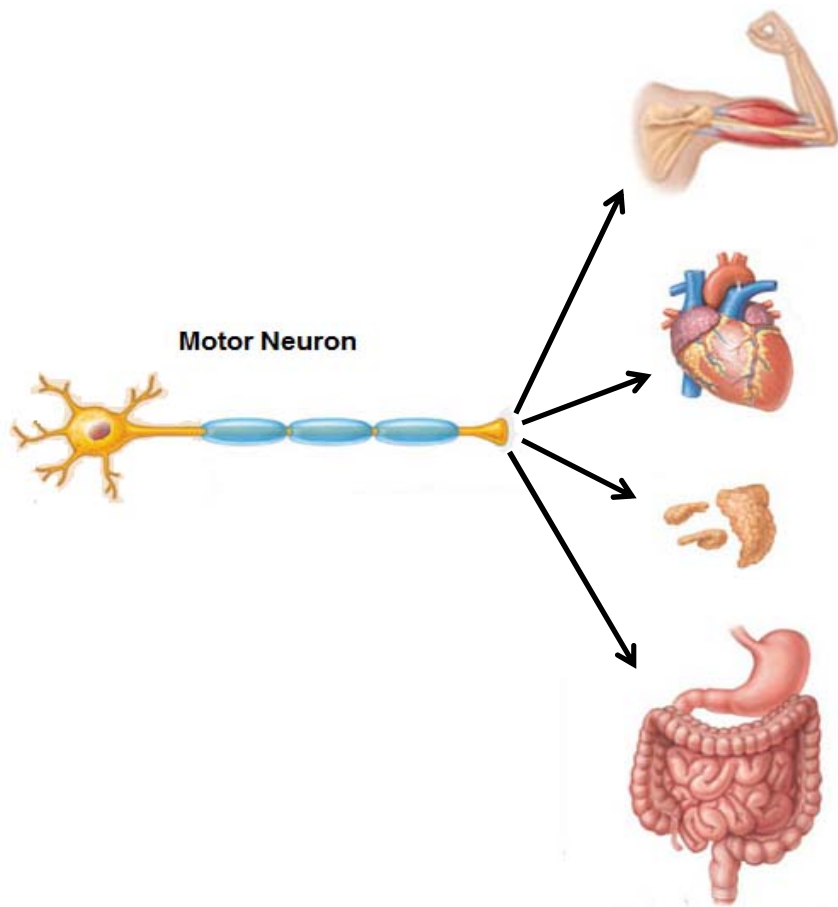


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## Subdivisions of the Motor Division

For each diagram below, label the subdivision, of the motor division, that controls it.

### Subdivision of Motor Division



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### Somatic Nervous System

10. The somatic nervous system controls \_\_\_\_\_ movements, which are movements under your conscious control.

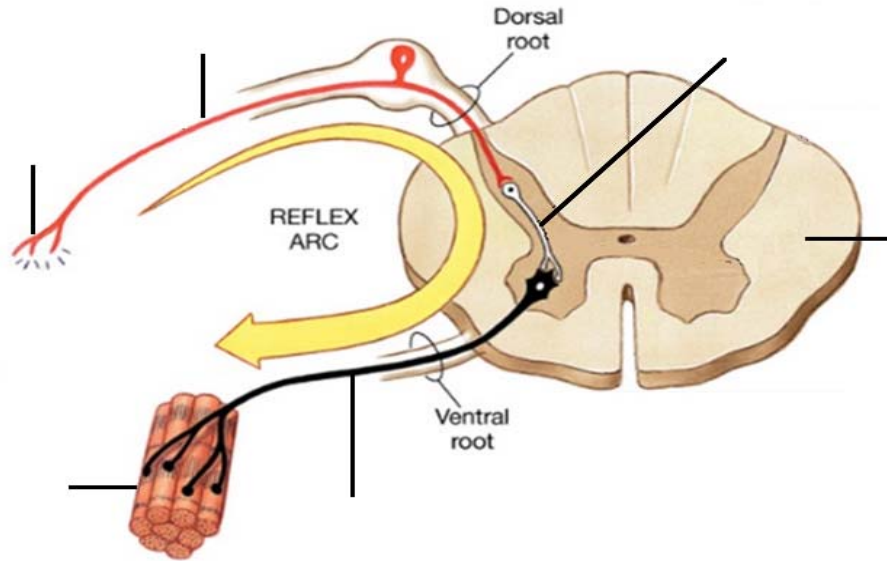
### Reflexes

11. A \_\_\_\_\_ is an involuntary reaction in response to a stimulus applied to the periphery and transmitted to the CNS.



**Reflexes (continued)**

Using the list below, color and label the different parts of a reflex arc.



effector organ/muscle  
interneuron

motor neuron  
sensory neuron

sensory receptor  
spinal cord

**Autonomic Nervous System**

12. The autonomic nervous system controls \_\_\_\_\_ movements, which are movements that are NOT under your conscious control.
13. For each diagram, describe what is happening, write in the correct division of the autonomic nervous system, and briefly explain why the diagram you chose best represents the division of the autonomic nervous system.

**What is happening?**

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Division \_\_\_\_\_

**Explanation:**

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**What is happening?**

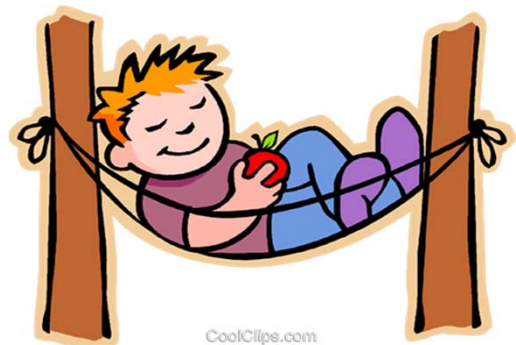
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Division \_\_\_\_\_

**Explanation:**

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