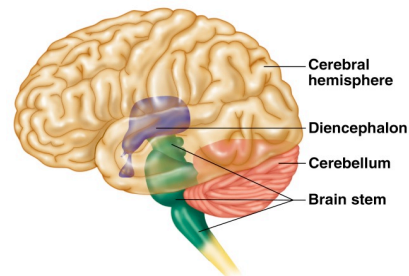
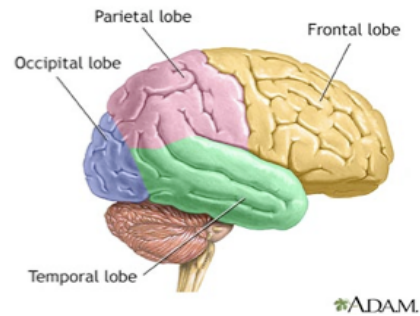




Nervous System Notes Part 2: Brain & Divisions of NS

Questions	Notes
<p>What are the 2 major divisions in the nervous system?</p>	<p>III. Divisions of the Nervous System</p> <ul style="list-style-type: none"> The human nervous system has _____ major divisions:
<p>What 2 organs make up the CNS?</p>	<p>A. Central Nervous System (CNS)</p> <ul style="list-style-type: none"> _____ of the body The central nervous system relays messages, processes information, analyzes information. Made of two parts: <ul style="list-style-type: none"> i. _____ <ul style="list-style-type: none"> Impulses flow to and from the brain 100 billion neurons, mainly _____ ii. _____ <ul style="list-style-type: none"> Main _____ between brain and the rest of the body Processes information such as _____
<p>What 3 structures protect the brain & spinal cord?</p>	<p>1. Protection of the CNS</p> <ul style="list-style-type: none"> Brain and spinal cord are protected by: <ul style="list-style-type: none"> a] _____ - skull, and vertebrae b] _____ - layers of connective tissue that surrounded the organs c] Cerebrospinal _____ - fluid found in between meninges and organ <ul style="list-style-type: none"> Acts as a shock absorber Continually circulates around the brain
<p>What is meningitis?</p>	<ul style="list-style-type: none"> DISEASE: Meningitis <ul style="list-style-type: none"> Inflammation of the meninges Can be caused by a viral, bacterial or microorganism infection Causes headaches, neck stiffness, confusion, sensitivity to light and sound Can be life threatening
<p>What is hydrocephalus?</p>	<ul style="list-style-type: none"> DISEASE: Hydrocephalus ("water on the brain") <ul style="list-style-type: none"> Accumulation of CSF in the brain Exerts pressure on the brain causing brain damage
<p>What are the 4 regions of the brain?</p>	<p>2. Regions of the Brain (Four Regions: Cerebral Hemispheres, Diencephalon, Brain Stem, Cerebellum)</p> <p>a. _____ (Cerebrum)</p> <ul style="list-style-type: none"> Left and right hemispheres Left brain - logic, language, math Right brain - creativity, intuition, art, music Connected by the _____ (communication link between left and right) The surface is made of ridges (_____) and grooves (_____)

<p>Name the lobes found in the cerebrum.</p>	<ul style="list-style-type: none"> Fissures (deep grooves) divide the cerebrum into four lobes <ol style="list-style-type: none"> _____ lobe: visual integration Parietal lobe – spatial knowledge, math _____ lobe – memories, auditory, language Frontal lobe – emotion, future planning, judgment, muscle movement, language
<p>Where is the diencephalon located?</p>	<ul style="list-style-type: none"> _____ System – involved in emotion, motivation, arousal, memory, and learning <ul style="list-style-type: none"> Amygdala – _____ Hippocampus – _____ formation
<p>Describe the brain stem.</p>	<p>b. _____</p> <ul style="list-style-type: none"> Relay and control center Sits on top of the brain stem Two main parts <ul style="list-style-type: none"> _____ – relay between sensory areas and cerebrum _____ – regulates involuntary responses and hormone secretions of the pituitary gland
<p>What is the function of the spinal cord?</p>	<p>c. _____</p> <ul style="list-style-type: none"> _____ brain to the spinal cord Parts of the brain stem <ul style="list-style-type: none"> Midbrain – vision, hearing, motor control Pons – breathing, sleep Medulla oblongata – involuntary activity (breathing, heart rate, blood pressure) <p>d. _____</p> <ul style="list-style-type: none"> “_____” inferior and posterior to cerebral cortex Coordination, posture, motor learning
<p>What is another name for CVA?</p>	<p>3. Spinal Cord</p> <ul style="list-style-type: none"> Cylinder of nervous tissue that begins at the _____ of the brain Protected by the vertebral column & meninges Spinal nerves extend from the cord through each vertebrae Main _____ link between the brain and rest of body
<p>Describe Alzheimer’s disease.</p>	<p>4. Traumatic Brain Injuries & Diseases</p> <ul style="list-style-type: none"> Concussion, Contusion, Cerebral edema Cerebrovascular Accident (CVA) <ul style="list-style-type: none"> Commonly called a stroke The result of a blocked or ruptured blood vessel supplying a region of the brain Brain tissue supplied with oxygen from that blood source dies Loss of some functions or death may result Alzheimer’s Disease <ul style="list-style-type: none"> Progressive degenerative brain disease Mostly seen in the elderly, but may begin in middle age Structural changes in the brain include abnormal protein deposits and twisted fibers within neurons Victims experience memory loss, irritability, confusion, hallucinations and death



What structures make up the peripheral nervous system?

What are the 2 major divisions of the PNS?

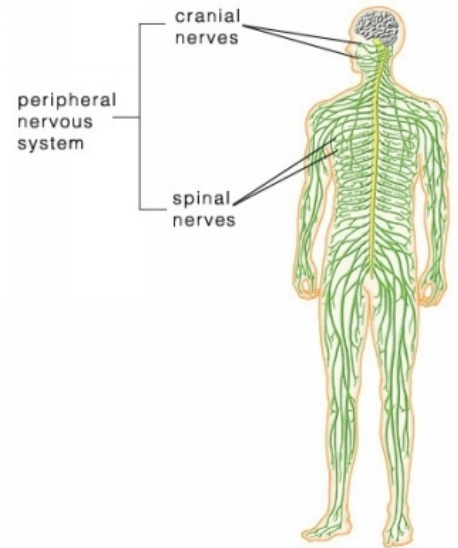
How are impulses transmitted in the sensory & motor divisions?

What activities are regulated by the somatic & autonomic system?

What are the 2 divisions of the autonomic nervous system?

B. Peripheral Nervous System (PNS)

- The peripheral nervous system is made up of all the _____ and _____ (nerve cell bodies) that carry messages between the body and the central nervous system (CNS)
- Receives information from the environment and transmits commands from CNS to organs and glands
- Contains mostly _____ and _____ neurons



Divisions of the PNS



Sensory division	Motor division
<ul style="list-style-type: none"> transmits impulses from _____ to the central nervous system 	<ul style="list-style-type: none"> transmits impulses from the central nervous system to the muscles or glands

Motor Division is subdivided into 2 divisions	
Somatic	Autonomic

Which system is responsible for reflexes?

- Regulates activities that are under _____ control
- Example: movement of muscles (wiggle toe)
- Involved in _____ (quick, automatic response to stimulus)

- Regulates activities that are _____ or involuntary
- Example: heart rate
- Consists of only motor nerves

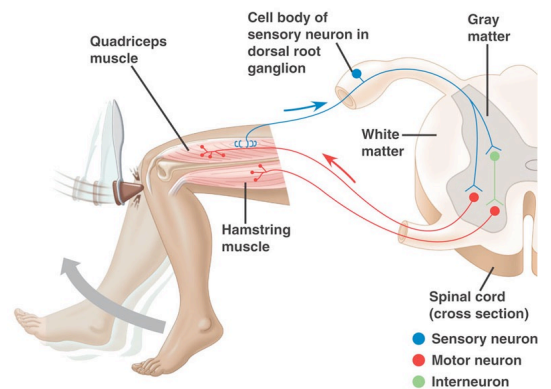
What is the pathway an reflex impulse travels?

Autonomic Division is subdivided into 2 divisions	
Sympathetic division	Parasympathetic division
<ul style="list-style-type: none"> • "_____" • Takes over to increase activities • Remember as the "_____" division = exercise, excitement, emergency, and embarrassment 	<ul style="list-style-type: none"> • Housekeeping activities • Conserves energy • Maintains daily necessary body functions • Remember as the "_____" division = digestion, defecation, and diuresis (urination)

How is homeostasis maintained?

• **Peripheral Nervous System & Reflexes**

- The peripheral nervous system is also involved in reflexes.
- A _____ is a quick and unconscious response to a stimulus
- The _____ with reflexes.
- The impulse travels up sensory neurons, to the spinal cord (interneuron), then immediately travels down motor neurons for a response.
- The pathway the impulse travels is called the _____



_____ (sense organ) → _____ neuron → _____ neuron → _____ (muscle)

- Internal Communication
 - Internal communication is critical to _____.
 - Sensory neurons are constantly sending information to the brain about the internal environment.

The _____ by sending signals through the motor neurons to maintain _____.

Learning Goals

1. Compare and contrast the CNS and PNS in terms of their structures and functions.
2. Describe the four lobes of the brain and what types of activities each controls.
3. Compare and contrast the sympathetic and parasympathetic divisions of the autonomic NS.
4. Explain the importance of a reflex and how reflexes can occur so quickly.