

What is the Nervous System?

Name: _____

Date: _____

What is the Nervous System?

- Your nervous system gathers _____ from your environment, processes that information, and acts on that information.
- All of this happens _____ than the time it took for you to read this line.

The Nervous System

- The _____ or nerve cell is the basic functional unit of the nervous system.
- Neurons consist of
 - the _____
 - _____
 - _____
- The **cell body** contains the _____.
- _____ are fibers that carry impulses from other neurons toward the cell body.
- _____ are fibers that carry impulses away from the cell body to other neurons.
- These nerve cells transfer _____ to other cells
- Neurons come in _____ varieties.
- _____ *Neurons* are nerve cells that convert external stimuli from the organism's environment into internal electrical impulses.
- These neurons are located on _____, joints, and skin, and in all organs, that communicate temperature, _____, and pressure.
- They have long _____ and a short axon.
- _____ *neurons* communicate with muscle tissue.
- This interaction causes the muscles to contract and relax, resulting in _____.
- They have _____ dendrites and a long axon.
- These two types of neurons work _____.
- The sensory neuron responds to a stimulus in the _____ and activates the motor neuron.
- The motor neuron activates muscles for reflexive, _____ motion.

The Nervous System: How Nerve Impulses Travel

- Nerve impulses travel through the nervous system through the _____ of neurons.
- When a cell receives a stimulus, it sends an _____ to a nearby neuron's dendrite.
- The impulse moves through the _____ to the next neuron.
- Neurons, however are _____ connected.
- There is a small _____ that separates them.
- The place where an impulse crosses from one neuron's axon to the dendrites of another is a _____.
- When the impulse reaches the end of the axon, the axon produces _____, called *neurotransmitters*, that enable it to cross the synapse.
- The neurotransmitters produce a new _____ impulse in the dendrites of the next neuron.
- Information travels in this way from one neuron to another until it gets to the _____ system.
- When the information is processed in the central nervous system a response impulse is sent over _____ set of neurons.

The Central Nervous System

- The nervous system is divided into two parts.
- The _____ **nervous system (CNS)** consists of the brain and the spinal cord.
- The _____ **nervous system (PNS)** consists of a network of nerves that extend outside the central nervous system.

The Central Nervous System: The Brain

- Your brain helps you do _____.
- It is the control center of your _____.
- The brain has three main parts...
 1. _____ (forebrain): largest part of the brain that controls thinking and voluntary movements of the skeletal muscles
 2. _____ (hindbrain): controls muscle coordination, balance, and muscle tone
 3. _____: carries information between the spinal cord and the brain and controls breathing, heartbeat rates, swallowing, and coughing
- The brain is divided into _____ hemispheres.
- The right hemisphere controls the _____ side of the body.

- The left hemisphere controls the _____ side of the body.
- Each hemisphere controls certain aspects of our _____.
- The right hemisphere controls...
 - Spatial _____
 - _____ recognition
 - Musical _____
- The left hemisphere controls...
 1. _____
 2. _____
 3. _____
- Current research suggest that the right hemisphere develops _____ than the left hemisphere.
- This allows children to experience their environment using their _____, such as voice, face, and melody recognition.

Central Nervous System: Spinal Cord

- _____ is the main pathway for connecting the PNS to the brain.
- _____ about pain, movement, temperature, touch, and vibrations are sent through the spinal cord.
- The spinal cord contains _____ of nerve fibers that send signals to the limbs, organs, and throughout the body.
- The spinal _____ protects the spinal _____.
- Spinal cord is _____ able to heal itself because some of its cells are complex and _____ that they cannot easily be regenerated.

Peripheral Nervous System

- The network of nerves that links the body to the brain and the spinal cord is called the _____ nervous system.
- It consists of _____ nervous system and _____ nervous system

Peripheral Nervous System: Somatic Nervous System

- The *somatic nervous system* is referred to as the voluntary _____ system because
 - it deals with your _____
 - sends _____ to and from your skeletal muscles, most of which you control
- This system also controls involuntary motions, called _____

Peripheral Nervous System: Autonomic Nervous System

- The *autonomic nervous system* controls most of the body process you never have to _____ about
 - Like _____, breathing, and heartbeat.
- The autonomic nervous system is further divided into the ...
 - _____ nervous system
 - _____ nervous system
- The *sympathetic system* helps the body prepare for _____ by providing extra energy to the skeletal muscles so the body can handle the stress
- When the stressful situation is over, the *parasympathetic system* returns the body to _____.

Scripture Spotlight

- *Does the activity of your mind mentioned in Colossians 3:2 happen automatically or does it require your voluntary choice?*

The Nervous System

- The CNS consists of the _____ and the _____, protected by the skull and spinal column.
- The PNS branches outside of the central nervous system and consists of _____ and _____ nerves.
- *How do the two parts of the PNS work together when you are in danger?*

Thinking

- Every day, your brain handles thousands of ideas and bits of information.
- Thinking falls into many categories, including:
 - _____
 - Memory
 - _____
 - _____ Thinking
 - _____ Thinking
- You cannot use one type of thinking without _____ on another.

- For example:
 - It is difficult to solve a problem (_____) without remembering (_____) what you have learned in the past.

Thinking: Perception

- You use your five senses to perceive your _____.
- _____ the information from your senses is a type of thinking called perception.
- _____ is the process of gathering information through our senses.

Thinking: Memory

- _____ is the ability to store learned information that you can retrieve for future use.
- You hold an _____ in your mind while you develop it, elaborate it, clarify it, and use it.
- For example, while performing a multistep math problem, you _____ math procedures and specific facts to help you solve the problem.

Thinking: Imagination

- Your imagination allows you to form images of things that are not _____.
- This means you are able to think about things in ways that are _____ from the way they are.
- Imagination involves _____ thinking.
- People use imagination in almost _____ aspect of life.

Thinking: Logical Thinking

- You use _____ thinking each time you solve a math problem, do a science experiment, or play a game that involves strategy.
- _____ **thinking** is the process in which you use reasoning to reach a conclusion.
- Logical thinking may involve...
 - _____ Reasoning
 - _____ Reasoning
- _____ **reasoning** is reasoning from a specific case or cases to make a general rule.
- _____ **reasoning** is the process that begins with general statements to develop a specific conclusion.

Thinking: Spiritual Thinking

- You have already learned about the nervous system and about several aspects of _____.
- God created us in His image to be in a _____ with Him.
- He gave us the ability to think in another way – _____.
- Have you ever done something you knew was wrong, but you did it anyway?
- Perhaps your _____ bothered you afterward.
- The Holy Spirit speaking through your conscience can help you know _____ from wrong.
- _____ and responding to your conscience is part of spiritual thinking.
- Another part of spiritual thinking is spending time in _____ with God.
- In prayer you can ...
 - invite God to examine your _____ (Psalms 26:2)
 - to _____ it to be Him (Romans 12:2)
- The Bible explains that things of God have to be understood _____ instead of from a merely human perspective (1 Corinthians 2:14-16).
- Wanting to know and obey God will help you understand spiritual things _____ than any other kind of thinking or reasoning.