What Is the Nervous System?

Worksheet

The nervous system is an organ system made of the brain, spinal cord, and nerves that detects stimuli, processes information, and controls responses through electrical impulses and chemical signals carried by neurons.

Questions

1. Which two structures make up the central nervous system (CNS)?

A) Brain and nerves
B) Brain and spinal cord
C) Spinal cord and skin receptors
D) Nerves and muscles

2. In a reflex arc, why is the response so fast?

A) It always involves the brain first
B) The spinal cord processes it directly, bypassing the brain
C) Motor neurons are skipped entirely
D) There is no receptor involved

3. Which cell type carries signals from a receptor toward the spinal cord?

A) Motor neuron
B) Sensory neuron
C) Interneuron only
D) Muscle cell

4. What triggers the muscle response in the knee-jerk reflex?

A) A sound stimulus
B) A stretch receptor activated by the tendon tap
C) A visual stimulus
D) A chemical taste receptor

5. You accidentally touch a hot stove and pull your hand away before you even feel pain. Explain using the nervous system.

6. A student sees a math problem, thinks through the steps, and writes the answer. Which parts of the nervous system are mainly involved?

7. A doctor taps just below the kneecap with a small hammer and the leg kicks out. What nervous system process is this?

8. Define: What is the nervous system?

9. Define: What are the two main divisions of the nervous system?

10. Define: What is a reflex arc?

Answer Key

1. B) Brain and spinal cord - The CNS consists of the brain and spinal cord; everything else belongs to the peripheral nervous system.

2. B) The spinal cord processes it directly, bypassing the brain - Reflex signals are relayed in the spinal cord to motor neurons directly, saving the time it would take to reach and return from the brain.

3. B) Sensory neuron - Sensory neurons carry information from receptors toward the central nervous system.

4. B) A stretch receptor activated by the tendon tap - Tapping the tendon stretches a receptor in the muscle, starting the reflex arc that ends in a motor response.

5. Heat receptors in the skin detect the dangerous temperature A sensory neuron sends the signal to the spinal cord An interneuron in the spinal cord relays the signal directly to a motor neuron (reflex arc, bypassing the brain) The motor neuron triggers the arm muscle to contract, pulling the hand away - all before the brain registers pain

6. The eyes send visual information via sensory neurons to the brain The brain (central nervous system) processes and reasons through the problem - this is conscious, voluntary processing Motor neurons carry signals from the brain to the hand muscles The hand writes the answer - a deliberate, non-reflex action

7. The tap stretches a tendon, activating a stretch receptor in the muscle A sensory neuron carries the signal to the spinal cord In the spinal cord, the sensory neuron connects (often directly) to a motor neuron The motor neuron causes the quadriceps muscle to contract, producing the knee-jerk reflex

8. An organ system of the brain, spinal cord, and nerves that detects stimuli and controls the body's responses using neurons.

9. The central nervous system (CNS: brain + spinal cord) and the peripheral nervous system (PNS: all other nerves).

10. A fast, automatic response pathway that often bypasses the brain, routing signals through the spinal cord for speed.