What is the Central Nervous System?

Worksheet

The central nervous system is made up of the brain and spinal cord; it integrates sensory information, generates thoughts and decisions, and coordinates the body's motor responses.

Questions

1. Which two structures make up the CNS?

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

2. What is the function of cerebrospinal fluid?

A) Carries oxygen to muscles
B) Cushions the CNS and removes waste
C) Produces hormones
D) Contracts skeletal muscle

3. Which brain structure primarily controls balance and coordination?

A) Cerebrum
B) Cerebellum
C) Hypothalamus
D) Medulla

4. Damage to the brainstem is especially dangerous because it can disrupt

A) Memory only
B) Vision only
C) Vital functions like breathing and heart rate
D) Skin sensation only

5. A person suffers a spinal cord injury at the waist level. Explain why they can still move their arms but not their legs.

6. Explain why a severe head injury can affect breathing, while a hand injury cannot.

7. Describe the role of cerebrospinal fluid (CSF) if the brain is jolted during a fall.

8. Define: What two structures make up the CNS?

9. Define: What are the meninges?

10. Define: What is cerebrospinal fluid (CSF)?

Answer Key

1. B) Brain and spinal cord - The CNS consists specifically of the brain and spinal cord.

2. B) Cushions the CNS and removes waste - CSF protects the CNS by cushioning it and clearing metabolic waste.

3. B) Cerebellum - The cerebellum fine-tunes movement and balance.

4. C) Vital functions like breathing and heart rate - The brainstem controls automatic survival functions.

5. Motor signals from the brain travel down the spinal cord to reach muscles Signals to the arms leave the spinal cord above the injury site, so they are unaffected Signals meant for the legs must pass through the injury site to continue downward Because the injury blocks transmission below that level, leg movement is lost while arm movement remains intact

6. Breathing is controlled by the brainstem, part of the CNS A severe head injury can directly damage the brainstem's respiratory centers A hand injury only affects peripheral nerves and muscles, not CNS control centers Therefore only CNS damage near the brainstem can disrupt automatic functions like breathing

7. CSF fills the space between the brain and the skull, in the meninges When the head is jolted, CSF acts as a cushion, absorbing some of the shock It also removes waste products from brain tissue Without adequate CSF cushioning, the brain would be more prone to injury from impacts

8. The brain and the spinal cord.

9. Three protective membrane layers (dura, arachnoid, pia mater) surrounding the brain and spinal cord.

10. A clear fluid that cushions the CNS, removes waste, and circulates nutrients.