

## Total Control

We all use computers for learning and fun, but do you know about the greatest computer of all? The human body is the most powerful computer ever with the nervous system serving as the technology center for our bodies.

The nervous system has two main organs, the brain and the spinal cord. Cells called neurons and nerve tissue made from thousands of neurons form a network of connections from every part of the body to the spinal cord and brain. Through this network of connections, our bodies communicate with our brains.

The adult brain is a three-pound pinkish-gray mass of jellylike tissue made of about one billion neurons (nerve cells) and blood vessels. The blood vessels supply the brain cells with food and oxygen and rid the cells of waste, keeping these neurons alive and healthy. The brain is the control center for all movement, sleep, hunger, thirst, and every other activity necessary for human survival. The brain also controls all emotions including love, hate, fear, and happiness. All learning takes place in the brain such as speech, recognizing items, and understanding.

Leading to the brain is a network of connections that allow every part of our bodies to communicate with our brains. Nerve cells called neurons link to form a chain that impulses travel across on their way to and from the brain. For instance, if my knee itches, the neurons in my knee send an impulse along the path to my brain. My brain then reports the itch and sends an impulse to my finger to scratch the itch. Of course all the muscles of my arm must be told that the finger needs to move. That is also the job of the brain.

Groups of neurons join to form nerve tissue. The largest and strongest nerve tissue is the spinal cord. This is the main communication path from our body parts to the brain. All impulses must pass through the spinal cord coming to and from the brain.

If the body was a computer system, the brain would be the computer (CPU) that controls everything. The monitor, mouse, and keyboard would be like our head, arms, and legs in that they can't work without being connected to the CPU. The cables and wires would be like the network of neurons that connect these parts to the CPU and send messages to and from the parts and the CPU. The power cable would be like the spinal cord. Without power, no communication can take place between the computer parts and the CPU. Likewise, without the spinal cord, no impulses can reach the brain.

When you are using a computer, think about the CPU (brain) of the computer being like your brain. Think about the need for the cables (neurons and nerve tissue) to allow communication between the computer parts. Think about the need for power (spinal cord) for the system to work. But most of all, remember the most powerful computer ever, the one in total control, you!

Name \_\_\_\_\_  
Date \_\_\_\_\_

## Total Control Implicit Questions

1. What part of the nervous system has total control of our bodies?  
Since we know \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_ ,

it is implied that \_\_\_\_\_  
\_\_\_\_\_ .

2. What would happen if you had a spinal cord injury?  
Since we know \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_ ,

it is implied that \_\_\_\_\_  
\_\_\_\_\_ .

3. What would happen if no blood was getting to our brains?  
Since we know \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_ ,

it is implied that \_\_\_\_\_  
\_\_\_\_\_ .

4. What organ of our bodies controls sadness?  
Since we know \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_ ,

it is implied that \_\_\_\_\_  
\_\_\_\_\_ .

Total Control  
Implicit Questions  
**Teacher Key**

**The answers below are an example of correct responses. Student answers may vary in wording but not in the ideas stated.**

1. What part of our nervous system has total control of our bodies?  
Since we know **the brain controls all activity and emotions,**  
it is implied that **the brain has total control of our bodies.**

2. What would happen if you had a spinal cord injury?  
Since we know **all impulses must pass through the spinal cord,**  
it is implied that **a spinal cord injury would keep some of the impulses from reaching the brain.**

3. What would happen if no blood was getting to our brains?  
Since we know **blood supplies the brain cells with food and oxygen and rids the brain cells of waste keeping the cells alive,**  
it is implied that **if no blood was getting to our brains, the cells would not stay alive.**

4. What organ of our bodies controls sadness?  
Since we know **our brains control all emotions such as love, hate, fear, and happiness,**  
it is implied that **our brains control sadness.**

# Total Control Outline

- I. Parts of the nervous system
  - A. Brain
    - 1. 3 pounds
    - 2. About one billion neurons
    - 3. Controls everything in the body
      - a. Movements
      - b. Emotions
      - c. Learning
  - B. Neurons (cells)
    - 1. Network of connections
    - 2. Impulses travel across
  - C. Spinal cord
    - 1. Strongest nerve tissue
    - 2. Connects to brain
    - 3. All impulses pass through
- II. Like a computer
  - A. CPU like our brain
  - B. Keyboard like our arm
  - C. Cables like our neuron network
  - D. Power cord like our spinal cord