

**Key Concept Builder** 

**LESSON 1**

## The Nervous System

**Key Concept** How do the parts of the nervous system work together?

**Directions:** On the line before each definition, write the letter of the term that matches it correctly. Some terms might be used more than once or not at all.

- |   |                       |
|---|-----------------------|
| _____ 1. contains many folds                    | <b>A.</b> spinal cord |
| _____ 2. helps you keep your balance            | <b>B.</b> cerebrum    |
| _____ 3. a tubelike structure                   | <b>C.</b> cerebellum  |
| _____ 4. the center of thinking                 | <b>D.</b> brain stem  |
| _____ 5. controls a sneeze                      |                       |
| _____ 6. allows for repetitive motions          |                       |
| _____ 7. keeps your heart beating               |                       |
| _____ 8. an information highway                 |                       |
| _____ 9. processes touch and visual information |                       |

**Directions:** Answer each question using the space provided.

**10.** The nervous system consists of the central nervous system and another system. What is that other system?

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**11.** What are the two parts of this other system, and what do they do?

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**Enrichment**

**LESSON 1**

**Brain Hemispheres**

The cerebrum, the most complex part of the brain, controls memory, language, and thought. It also processes touch and visual information.

The cerebrum is divided into two halves, or *hemispheres*—the right hemisphere and the left hemisphere. These hemispheres are sometimes called simply right brain and left brain. They are connected by bundles of nerves.

**Hemisphere Functions**

Researchers have discovered that each hemisphere has specialized functions. For example, the left hemisphere, which controls the muscles on the right side of the body, more actively processes language, math, sequential tasks, analysis, and logic. The right hemisphere, which controls the muscles on the left side of the body, more actively processes spatial orientation, music, visual imagery, imagination, and creative expression. Studies have shown that one side of the brain is often more dominant than the other. But it is important to recognize that the two hemispheres share some functions; they work together to process information.

**Brain Dominance**

The table lists preferences and traits of people who are left-brain dominant or right-brain dominant. Scientists theorize that brain dominance can affect different

aspects of a person's life, including performance in school and career choices. For example, many students who are right-brain dominant perform well in grades K through 3—grades where art and music are often incorporated into learning.

| Preferences and Traits |                      |
|------------------------|----------------------|
| Left-Brain Dominant    | Right-Brain Dominant |
| Classical music        | Popular music        |
| Punctuality            | Flexibility          |
| Uses facts             | Uses insight         |
| Thoughtful             | Active               |
| Chess                  | Art                  |

**Nature or Nurture?**

There are still many unanswered questions about brain dominance. For example, scientists want to know whether brain dominance is set at birth or influenced by social factors. Current data are not conclusive. Some studies indicate that brain dominance is present at birth and that genetics largely determines which hemisphere is dominant. Other studies indicate that brain dominance continues to develop until adolescence and that social factors play a role in determining which hemisphere dominates.

**Applying Critical-Thinking Skills**

**Directions:** Answer each question or respond to each statement.

- Infer** Why do researchers have a difficult time determining brain dominance in infants?
- Distinguish** Which side of the brain do you think you use more? Explain your answer.