**Nervous System Research Questions**

**Read over page 422-427 and answer the following questions/statements.**

1. Nerves can detect a stimulus in the environment and send a signal through the spinal cord to a major organ called the brain.
2. The brain then sends a signal to respond.
3. Which system collects information and responds to it by sending electrical messages? Nervous system
4. The collected information may come from inside or outside the body. What is the center of the nervous system? The brain.
5. Nerve cells are long and thin to send messages long distances.
6. In the diagram of the batter, what part of his nervous system will first send an electrical message to the brain? The eyes
7. The brain then sends electrical messages to the muscles to swing the bat.
8. What two body systems could be working together as demonstrated in this diagram? Nervous and muscular
9. Nerve cells transfer information between the body and the spinal cord and the brain. Nerves pass electrical messages from one cell to the next along the line of nerves.

10. The human body systems must maintain homeostasis which means to maintain a constant internal environment when outside conditions change. Responding to change allows all systems to work properly.

11. If the brain detects the body temperature is getting too low, it tells the body to shiver. The body is maintaining homeostasis because the body shivering will release energy as heat (thermal energy) which warms the body.

12. The long, thin cells of the nervous system help transmit electrical messages around the body.

13. If body temperature goes up, the body senses the change and will work to reduce the body temperature to normal. (sweating)

14. What word describes “maintaining stable conditions inside the body”? homeostasis

**Read over pages 475-481 and answer the following questions/statements.**

15. Does the central nervous system allow us to the sense the environment around us?

Yes or no

16. Is the spinal cord part of the nervous system? Yes or no

17. The nervous system is made of the structures that control the actions and reactions of the body in response to stimuli from the environment.

18. Name the two parts of the nervous system.

a. central nervous system

b. peripheral nervous system

19. The central nervous system is made up of the brain and spinal cord.

20. What is the name of the main command organ of the central nervous system? The brain

21. What allows the brain to communicate with the rest of your body? Spinal cord

22. The peripheral nervous system has two main parts, sensory part and motor part.

23. Processes that the brain controls happen automatically, or called involuntary.

24. Actions in which you control are voluntary.

25. The brain has three main areas called:

a. cerebrum

b. cerebellum

c. brain stem

26. What is the largest part of the brain called? cerebrum

27. Which part of the brain is where you think and problem-solving takes place? cerebrum

28. Which part of the brain is in charge of storing memories? cerebrum

29. Which part of the brain controls voluntary movements and allows you to sense touch, light, sound, odors, taste, pain, heat, and cold? cerebrum

30. Which part of the brain processes information from your body allowing you to keep track of your body’s position and coordinate movements? cerebellum

31. What part connects the brain to the spinal cord? Brain stem

32. What part of the brain controls involuntary processes, such as blood pressure, body temperature, heart rate, and involuntary breathing? Brain stem(medulla)

33. What is made up of bundles of nerves? Spinal cord

34. A nerve is a collection of nerve cell extensions bundled together with blood vessels and connective tissue.

35. The spinal cord is surrounded by protective bones called vertebrae.

36. Special cells in your skin and muscles carry sensory information to the spinal cord. The spinal cord carries these impulses to the brain. The brain interprets these impulses as warmth, pain, or other sensations and sends information back to the spinal cord. Different cells in the spinal cord then send impulses to the rest of the body to create a response.

37. Sensory information flows in from the environment to the spinal cord. Motor information flows out from the spinal cord to muscles.

38. Electrical impulses are sent from the brain to the body by special cells called neurons. A neuron is a cell that moves messages in the form of fast-moving electrical energy.

39. What parts make up a neuron? Cell body, axon, dendrites, axon terminal

40. Complete the chart below.

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| **Neuron Part** | **Structure** | **Function** |
| Cell body | Region containing nucleus and organelles | Gathers information from dendrites |
| Dendrites | Branches of the cell body | Gathers information from other cells |
| Axon | Long branch from the cell body | Sends impulse away from cell body |
| Axon terminal | End of axon | Changes electrical signal to chemical signal |

41. Name the five sensory organs that work directly with the nervous system.

Eyes (sight), nose (smell), skin (touch), ears (hearing), tongue (taste)

The CNS and PNS are both made of nerves