

The Nervous System

Grade Level or Special Area: Third Grade

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Length of Unit: Four lessons, each lesson approximately 45 minutes (if teachers choose to perform culminating activity B, they will need to add another 45 minutes)

I. ABSTRACT

In this unit, students will develop a basic understanding of the nervous system. Through a series of activities, students will learn the main parts of the nervous system and their functions in the human body.

II. OVERVIEW

A. Concept Objectives

1. Students understand how the human body functions, factors that influence its structures and functions, and how these structures and functions compare with those of other organisms. (Colorado Science Standard 3.3)
2. Students will recognize the parts and jobs of the nervous system.

B. Content from the *Core Knowledge Sequence* (pg. 82)

1. Third Grade Science: The Human Body: Nervous System
 - a. Brain: medulla, cerebellum, cerebrum, cerebral cortex
 - b. Spinal cord
 - c. Nerves
 - d. Reflexes

C. Skill Objectives

1. The students will identify and label the three main parts of the nervous system.
2. The students will label the parts of the brain and identify the main jobs of each part of the brain.
3. The students will complete an activity on the spinal cord and nerves.
4. The students will perform a reflex activity with a partner.
5. The students will write a paragraph describing the main parts of the nervous system.

III. BACKGROUND KNOWLEDGE

A. For Teachers

1. *The Human Brain* by Seymour Simon
2. Neuroscience for kids website (see Bibliography)

B. For Students

1. Students will have prior knowledge of the nervous system from their study of it in first grade.

IV. RESOURCES

- A. Neuroscience for Kids website URL: <http://faculty.washington.edu/chudler/neurok.html> (extension activities)
- B. Human brains and animal brains: if performing the culminating activity (see Appendix M)

V. LESSONS

Lesson One: Parts of the Nervous System (approximately 45 minutes)

A. Daily Objectives

1. Concept Objective(s)
 - a. Students understand how the human body functions, factors that influence its structures and functions, and how these structures and functions compare with those of other organisms.
 - b. Students will recognize the parts and jobs of the nervous system.
2. Lesson Content
 - a. Nervous System
 - i. Brain: medulla, cerebellum, cerebrum, cerebral cortex
 - ii. Spinal cord
 - iii. Nerves
 - iv. Reflexes
3. Skill Objective(s)
 - a. The students will identify and label the three main parts of the nervous system.

B. Materials

1. Appendix A: one for the teacher
2. Appendix B: one for each student
3. Appendix C: one for every student
4. Appendix D: one for every student and on transparency for the teacher
5. Appendix E: one for the teacher
6. Appendix F: one for every student

C. Key Vocabulary

None

D. Procedures/Activities

1. Begin by asking the students to tell you what they have learned about the human body so far. They should already have studied the skeletal and muscular system and should have knowledge of this. Those that studied the human body in previous grades may have prior knowledge as well.
2. Tell the students that they are going to start this next section on the human body with a fun little quiz.
3. Pass out Appendix B to the students and have them complete it. Encourage the students to follow through on it even though some may feel silly.
4. Ask them to share what they think all of these test items have in common.
5. Tell them that all of these actions require the use of a person's nervous system.
6. Tell them that the nervous system is made up of three parts.
7. Tell the students that they are going to label the three main parts of the nervous system today and will learn about each of these parts in later lessons.
8. Have the students guess where the nervous system is in their body. Many will guess the brain.
9. Tell the students that the nervous system actually works throughout your body, but is controlled mainly by the brain.
10. Tell the students to put their hands on their head. This is where their skull is located. Inside the skull is the brain. The brain plays a very important function in the nervous system.
11. Pass out Appendix D to the students and have a copy of the diagram on a transparency projector.
12. Have the students point to the brain on the diagram. Label the brain on the diagram as a class.

13. Tell the students to put their fingers on the back of their heads and move the fingers down toward the neck until they feel a lump. This is the place where their brain connects with the spinal cord. They will learn about this in a later lesson.
 14. Have the students find and label the spinal cord on their drawings.
 15. Tell the students that the last part of the nervous system consists of many nerves.
 16. Have the students locate the nerves on the diagram and label those parts.
 17. Allow the students to color the parts of the nervous system different colors.
 18. Tell the students that in later lessons, they will be writing a paragraph about the nervous system. Tell them the paragraph will be about each of these three parts of the nervous system. As a class, come up with a topic sentence for this paragraph. You may have students write this topic sentence on a piece of lined paper or on Appendix F. They will later write the rest, and then write a final draft.
 19. At this time, either pass out the cover page for the student packets (Appendix C) or allow the students to begin creating their own cover page for this short unit.
- E. *Assessment/Evaluation*
1. Students will be evaluated on their understanding of where the parts of the nervous system are located by their labels on the diagram on Appendix D.

Lesson Two: Parts of the Brain (approximately 45 minutes)

- A. *Daily Objectives*
1. Concept Objective(s)
 - a. Students understand how the human body functions, factors that influence its structures and functions, and how these structures and functions compare with those of other organisms.
 - b. Students will recognize the parts and jobs of the nervous system.
 2. Lesson Content
 - a. Brain: medulla, cerebellum, cerebrum, cerebral cortex
 3. Skill Objective(s)
 - a. The students will label the parts of the brain and identify the main jobs of each part of the brain.
- B. *Materials*
1. Appendix A: one for the teacher
 2. Appendix G: one for every student
 3. Appendix H: one for the teacher
 4. Various items that weigh approximately three pounds
 5. Playdough: one container for every student or group of five students
 6. Optional activity: one piece of white paper for every student
- C. *Key Vocabulary*
1. The *medulla*, also known as the brain stem, keeps a person's heartbeat and breathing regular.
 2. The *cerebrum*, also known as the cerebral cortex is the outer-coiled gray matter around the brain that controls thinking, sensing, and moving.
 3. The *cerebellum*, or little brain, controls posture, balance and coordination.
- D. *Procedures/Activities*
1. Review the previous lesson with the students by having them name the three main parts of the nervous system.
 2. Tell the students that in this lesson they will learn about the brain.
 3. Tell the students that the brain is one of the largest parts of the nervous system and acts like the control center.

4. Have the students guess how much a brain would weigh.
5. Pass around various items that weigh approximately three pounds (the weight of an adult human brain). Have the students guess the weight and then use a scale to determine the exact weight of each item.
6. Tell the students that the brain is composed of the cerebral cortex, the cerebrum, the cerebellum and the medulla.
7. Tell the students to think of one thing they've learned about the nervous system so far. Then, have them share this one thing with a partner. As partners have them think of one other thing that they would like to learn about the brain.
8. Tell the students that they have just used the part of their brain called the cerebral cortex. Have them share two actions that they just performed (answers should include thinking, and speaking or language)
9. Tell the students that the word "cortex" comes from the Latin word for "bark" (of a tree). Just like the bark of a tree makes up the outer layer of the tree, the cerebral cortex (cerebrum) is the outer layer of the brain. It surrounds the cerebrum. The thickness of the cerebral cortex varies from 2 to 6 mm.
10. Have the students take some playdough and, using a ruler, make a cord that is 2mm thick, another that is 3 mm thick, 4mm, 5mm, and 6mm (for a total of 5 cords). This will give the students an idea of the thickness of the cerebral cortex. Note—you can split this job up among students if there is a lack of playdough or time. Create groups of five students and have one student in each group make a cord of different thickness.
11. Show the students where the cerebral cortex is on the diagram on Appendix G.
12. Have the students label the cerebral cortex on Appendix G or, if you choose to do the optional activity below, have the students merely take notes on a blank sheet of paper. Note—the cerebral cortex and cerebrum are labeled in the same place and, even though they are slightly different, are often interchanged with one another. You can choose to only label the cerebral cortex if you feel the other will confuse students.
13. Tell the students that the cerebrum is the largest part of the brain and controls a great many things.
14. The students should have identified thought and speech (or language) as two actions that the cerebral cortex is in control of (see number 8 of this lesson).
15. Tell the students that the cerebral cortex also controls voluntary movement (such as raising your hand) and reasoning skills (also known as problem solving).
16. Have a student share with the class what they had to eat the night before. Tell the students that memory is a part of the job of the cerebral cortex as well.
17. Tell the students that the five senses are a part of the cerebral cortex's job as well. Have the students identify the senses as touch, taste, smell, hearing, and speech (already noted). Inform the students that they will learn a little more about touch and taste in the next lesson when they learn about nerves.
18. Have the students add this information to their labels of the brain or to their notes if the optional activity is being performed.
19. Have the students stand up and balance on one foot. Tell the students that their ability to balance on one foot is a job of another part of the brain called the cerebellum.
20. Tell the students that the Latin word for cerebellum means "little brain."
21. Based on that information have the students try to find the cerebellum on the diagram. Have the students share ways that the cerebellum is like the cerebrum/cerebral cortex (it looks like a smaller version of the cerebrum, it controls actions in your body, etc.)

22. Tell the students that, in addition to controlling your sense of balance, the cerebellum also controls the movement of different parts of your body, coordination skills, as well as your posture.
 23. Have the students label the cerebellum on their diagram or simply take notes if performing the optional activity below.
 24. Have the students tell you the two parts of the brain that they have learned in this lesson.
 25. Ask, "How many parts of the brain did I tell you we would learn about?" Answer=three. "What part of the brain did you just use to remember what I told you at the beginning of the lesson?" Answer=The cerebral cortex because it controls memory.
 26. Tell the students that the last important part of the brain is the medulla, which is also known as the brain stem.
 27. Have the students take a deep breath in and let it out. Tell them that one job of the medulla is to control a person's breathing.
 28. Have the students feel for their heartbeat using either their wrist or their neck. Tell them that another job of the medulla is to control a person's heartbeat.
 29. If there is time, have the students perform an exercise activity such as jumping jacks or running in place for a minute. Ask them, "What happens to your breathing and heartbeat?" Answer= they speed up. Tell them that this is the medulla working. Discuss this as time allows.
 30. Have the students write the two functions of the medulla that they learned in this activity either in their notes or on the diagram.
 31. Optional activity: Have the students create a flip diagram. Allow the students to color each portion of the brain a different color. Then, have them cut out the diagram into three puzzle pieces and paste those pieces on a blank sheet of paper taking care to only paste part of each piece on the paper (so that each piece can be lifted up like a flap. Under each piece, or flap, have the students write the name of that part of the brain and its main jobs). They may also include mini pictures of the activities.
 32. Have the students take out the paragraph that they started during the last lesson. They should have a topic sentence already. Have them write a couple more sentences about the brain. Example: "The Nervous System is composed of three main sections. The first section is the brain which is made up of the cerebral cortex, the cerebellum, and the medulla." Have the student write a sentence for each of these parts. If you follow Step-up to Writing, the topic sentences would be green, the brain sentence would be green and each sentence about the parts of the brain would be red.
 33. Have the students add the diagram to their nervous system packets.
- E. *Assessment/Evaluation*
1. Students will be assessed by their oral answers to the review at the beginning of the lesson.
 2. Students will be assessed on their knowledge of the parts of the brain by their labels on the diagram on Appendix G.

Lesson Three: Spinal Cord and Nerves (approximately 45 minutes)

A. *Daily Objectives*

1. Concept Objective(s)
 - a. Students understand how the human body functions, factors that influence its structures and functions, and how these structures and functions compare with those of other organisms.

- b. Students will recognize the parts and jobs of the nervous system.
 - 2. Lesson Content
 - a. Spinal cord
 - b. Nerves
 - 3. Skill Objective(s)
 - a. The students will complete an activity on the spinal cord and nerves.
- B. *Materials*
 - 1. Appendix A: one for the teacher
 - 2. Appendix D: students should already have this
 - 3. Appendix I: one for each student
 - 4. A couple of boxes of paper clips
 - 5. Pencil: one for each student
 - 6. String
- C. *Key Vocabulary*
 - 1. The *spinal cord* is a long piece of nerve tissue that connects the brain to nerves in the rest of the body.
 - 2. *Nerves* are tiny fibers that are found in the spinal cord and the rest of the body. They carry messages throughout the body.
- D. *Procedures/Activities*
 - 1. Review orally with the students the three main parts of the nervous system and the three parts of the brain. Have the students point to the location of the three parts of the brain to show you that they understand where each is located.
 - 2. Tell the students that today they will learn about both the spinal cord and the nerves.
 - 3. Remind the students that the brain is the control center for the body. Relate it to a control tower of an airport.
 - 4. Tell the students that the brain as the control center (tower) needs a way of communicating to the rest of the body in order to tell it what to do just like the control tower of an airport needs a method of communicating with the pilots of the airplanes in order to tell them when to land or to communicate any dangers that they may encounter.
 - 5. Tell the students that the job of relaying messages from the brain to other parts of the body belongs to the spinal cord.
 - 6. Have the students find the bump at the bottom of their head. Tell them that this is the place where the brainstem (medulla) connects to the spinal cord. The spinal cord continues down a person's back. It connects nerves to the rest of the body so that the brain can communicate with the body.
 - 7. Have the students guess how long the average spinal cord may be.
 - 8. Tell the students that in adult men, the average spinal cord is 45 cm long and in adult women, it is 43 cm long. It weighs approximately 35 g.
 - 9. Have girls cut a piece of string that is 43 cm long and the boys cut as string that is 45 cm long to get an idea of approximately how long their spinal cords will be when they are adults.
 - 10. Using paper clips or other lightweight items, have the students measure out 35 g (approximately 35 paper clips) and feel the weight of the spinal cord.
 - 11. Ask the students to tell you what the job of the spinal cord is (to relay messages from the brain to other parts of the body).
 - 12. Tell the students that the messages are relayed through the spinal cord to nerves in your body. These nerves then react to the messages that are relayed to them.
 - 13. A nerve is a bundle of tiny messenger cells. They act like the body's wiring (or microphone/transmission system in control center of an airport).

14. Nerves branch out from the brain and spinal cord much like the branches of a tree branch out from the trunk.
 15. Tell the students to raise their hands. Inform the students that when they do this, the brain sends a signal or message out that travels through the nerves in their arms and hands telling the nerves that it is time for the hand to be raised.
 16. Tell the students that these messages travel very quickly so that we don't even realize that it is happening.
 17. Nerves also help the brain with the five senses. If we touch something with our fingers, the nerves send messages to the brain communicating texture, size, etc. and the brain can use that information to determine what it is touching.
 18. Have the students get into partners and complete the activity on Appendix I. When they are finished discuss how some parts of the body, such as the fingers, have more nerves and will therefore feel more than other parts.
 19. Have them add this activity sheet to their packet.
 20. Tell the students that in the next lesson they will learn about events when a nerve may not have time to communicate with the brain and reacts before the message gets to the brain. Encourage the students to think about when this might occur.
- E. *Assessment/Evaluation*
1. Students will be evaluated on their understanding of the brain based on their oral answers to the review questions at the beginning of this lesson.
 2. Students will be assessed on their understanding of the spinal cord and nerves by successfully completing the activity on Appendix I.

Lesson Four: Reflexes (approximately 45 minutes)

- A. *Daily Objectives*
1. Concept Objective(s)
 - a. Students understand how the human body functions, factors that influence its structures and functions, and how these structures and functions compare with those of other organisms.
 - b. Students will recognize the parts and jobs of the nervous system.
 2. Lesson Content
 - a. Reflexes
 3. Skill Objective(s)
 - a. The students will perform a reflex activity with a partner.
 - b. The students will write a paragraph describing the main parts of the nervous system.
- B. *Materials*
1. Appendix A: one for the teacher
 2. Appendix J: one for each student
 3. Ruler: one for each pair of students
 4. Pencil: one for each student
- C. *Key Vocabulary*
1. *Reflexes* are certain nerves in the spine and brain that tell the body to act really fast.
- D. *Procedures/Activities*
1. Review with the students the three main parts of the nervous system.
 2. Review with the students the jobs of the spinal cord and nerves.
 3. Ask the students to use their cerebral cortex to recall what you told them they would learn in this lesson. Answer—that sometimes there isn't enough time to communicate with the brain and the body must react quickly. In this case, there

are certain nerves in the body that act quickly before they finish communication with the brain.

4. Have the students give their thoughts on what events may cause a need for a quick reaction from the body.
 5. Ask the students if they have ever touched a hot stove. Allow them to tell you what their response to that was. Answer=they quickly pull their hand away and most probably said “ouch” or something like that.
 6. Tell the students that this is an example of when a nerve might need to react quickly. When your body reacts to something that a nerve feels without thinking about it that is called a reflex. If you had to wait for the message to get to your brain before your hand reacted, you would be severely burned.
 7. Tell the students that the message still goes to your brain though. Ask them if they have ever noticed how they often say “ouch” after they have taken their hand away. That’s because the message reaches their hand usually a split second after they have reacted by taking their hand away and their brain realizes that their body felt pain and reacted verbally by saying “ouch.”
 8. Tell the students that they are going to measure their reflexes in this lesson.
 9. Have the students complete the activity on Appendix J.
 10. Discuss the results with the students and have them include the activity in their packets.
 11. When they are finished, have the students complete the rough draft of the nervous system paragraph. Tell them to include a conclusion sentence.
- E. *Assessment/Evaluation*
1. Students will be assessed on their answers to the review questions at the beginning of the lesson.
 2. Students will be assessed on their understanding of the difference between regular messages of the nerves and reflex messages by their completion of the activity on Appendix J.
 3. Students will be assessed on their understanding of the parts and jobs of the nervous system by writing a paragraph.

VI. CULMINATING ACTIVITY

- A. Assign the test at the end of this unit. When students have finished the test, have them write the final draft of their nervous system paragraph and turn it in.
- B. As a fun but slightly gross extension activity, contact a local university or medical facility and ask them to donate or sell you some human brains and other animal brains. Have the students compare the brains and determine how animal brains are the same and different from human brains. Have the students complete a Venn Diagram or simply have a discussion about this.

VII. HANDOUTS/WORKSHEETS

- A. Appendix A: Teacher Information Page
- B. Appendix B: Fun Test
- C. Appendix C: Nervous System Cover Page
- D. Appendix D: Parts of the Nervous System
- E. Appendix E: Parts of the Nervous System Answer Key
- F. Appendix F: The Nervous System Paragraph
- G. Appendix G: Parts of the Brain
- H. Appendix H: Parts of the Brain Answer Key
- I. Appendix I: You’ve Got Nerves Activity
- J. Appendix J: Reflex Activity

- K. Appendix K: The Nervous System Test
- L. Appendix L: Nervous System Test Answer Key
- M. Appendix M: Culminating Activity Resources
- N. Appendix N: Extension Activities
- O. Appendix O: Rubrics

VIII. BIBLIOGRAPHY

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Appendix A

Teacher Information Page

Parts of the Nervous System:

1. Brain
2. Spinal Cord
3. Nerves

Brain:

Three main parts of the brain:

1. **Medulla:** The medulla is also known as the brainstem. The medulla keeps a person's heartbeat and breathing regular.
2. **Cerebellum:** The cerebellum coordinates muscles so body can move as you want it to.
3. **Cerebrum:** The cerebrum is also known as the cerebral cortex. It is the outer-coiled gray matter around the brain that controls thinking, sensing, and moving. Paying attention in class, reading a book, or playing games are all functions controlled by the cerebrum.

Spinal Cord:

The spinal cord is a long piece of nerve tissue that runs from the brain down through the backbone. The spinal cord connects the brain to the body's nerves.

Nerves:

Tiny fibers found in the spinal cord and throughout the body. The nerves pick up information and send it up the spinal cord to the brain. Some (special) nerves tell us when we are seeing, feeling, hearing, smelling, or touching something

Other nerves act as lines of communication that pass information.

Reflexes – Reflexes are certain nerves in the spine and brain that tell parts of body to act really fast, in a split second, whenever you have to dodge a ball or protect yourself. When body needs to act fast, it doesn't go from the sensory nerves to the brain before you take action. The message travels from the sensory nerve to the spinal cord. The message is sent back to the muscle right away, causing an action. We don't even think about the action. It is called a reflex. A reflex is an action we take even before our brains know about it.

Appendix B

Fun Test

1. Read the following numbers 4, 9, 11, 15, 12 to yourself. Remember these numbers.
2. Write the sum of 12 and 5.
3. Write the name of your favorite book.
4. Sing a line of your favorite song. You may do this quietly or loudly.
5. Stand up and read the following words out loud, “My teacher is the best teacher in the school.”
6. Without looking, write the numbers down from number one.
7. Stand up and do 10 jumping jacks.
8. Sit down.
9. Think about what all of these activities have in common. Write down your guess.
10. Put your head down and rest for a moment.

Appendix C
Nervous System Cover Page

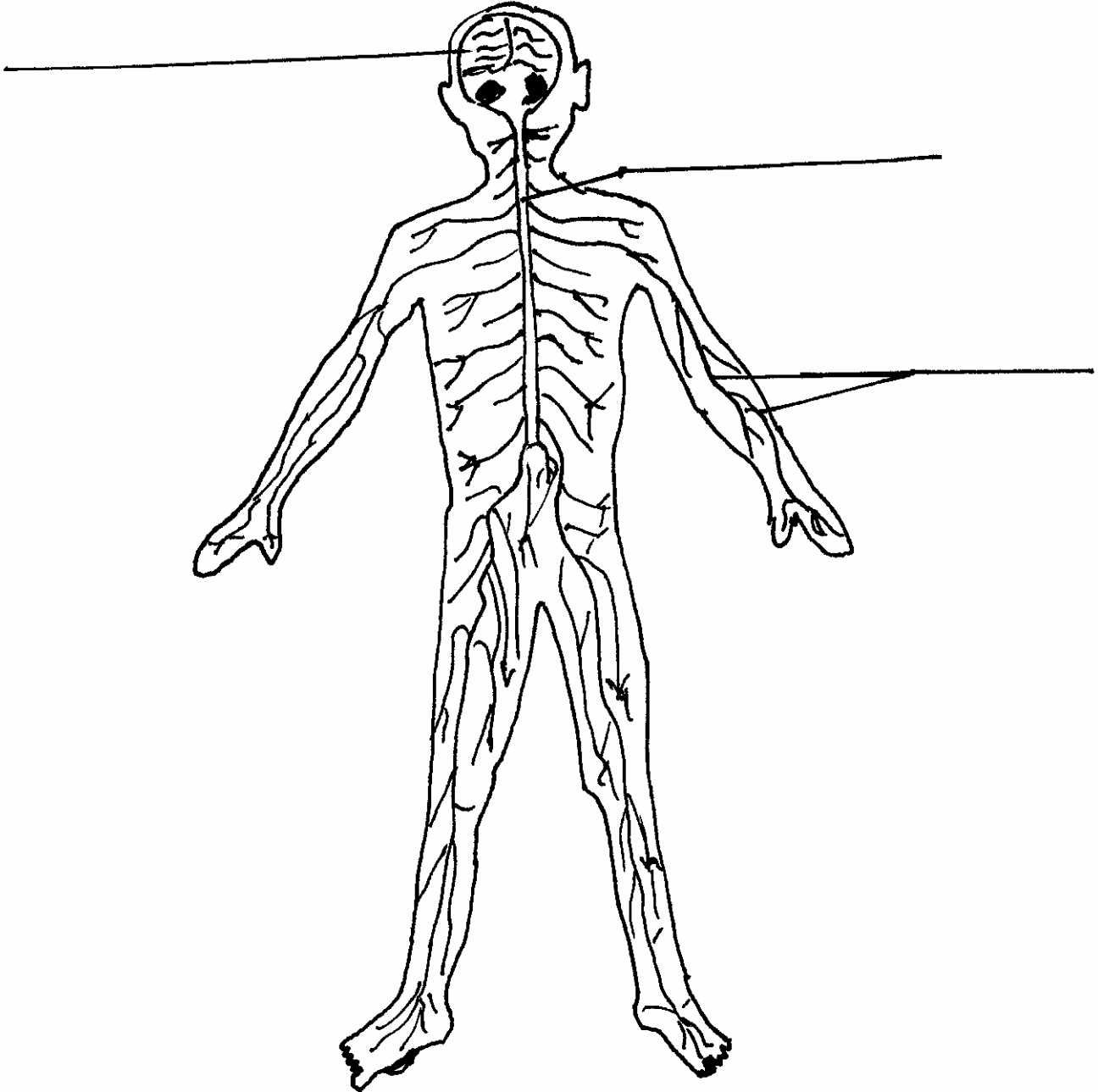
The Nervous System



Name _____

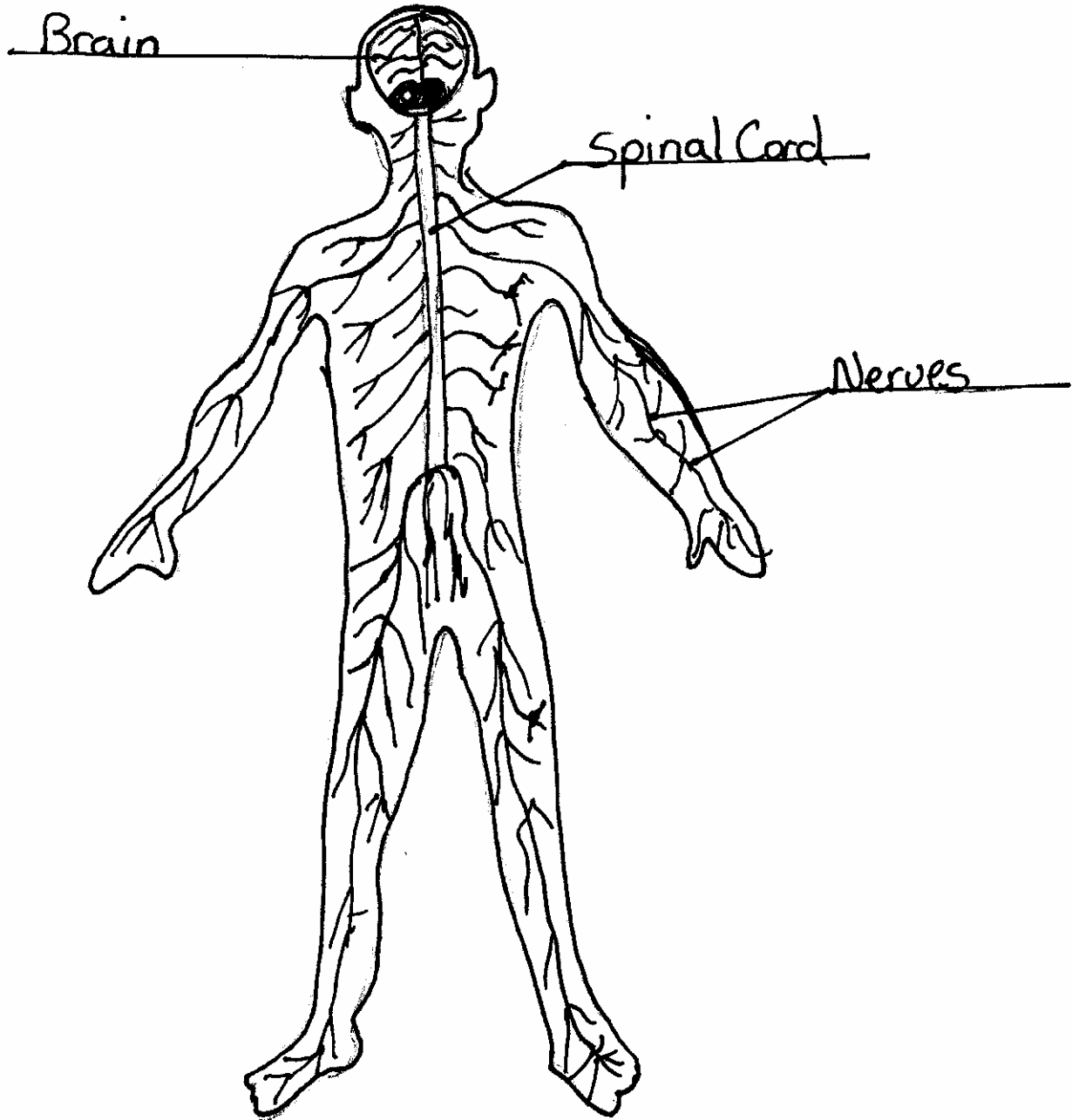
Appendix D

Parts of the Nervous System



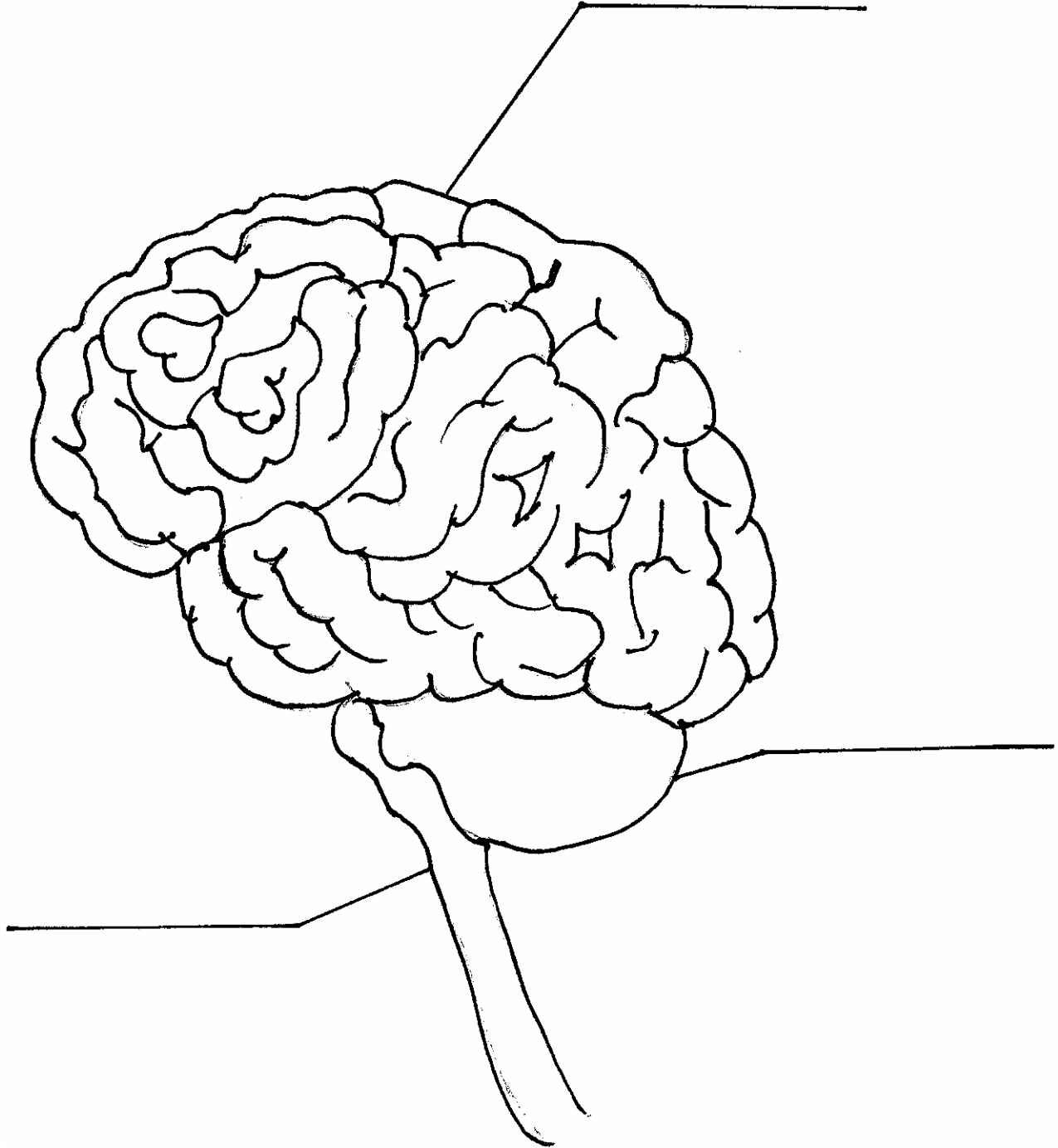
Appendix E

Parts of the Nervous System Answer Key



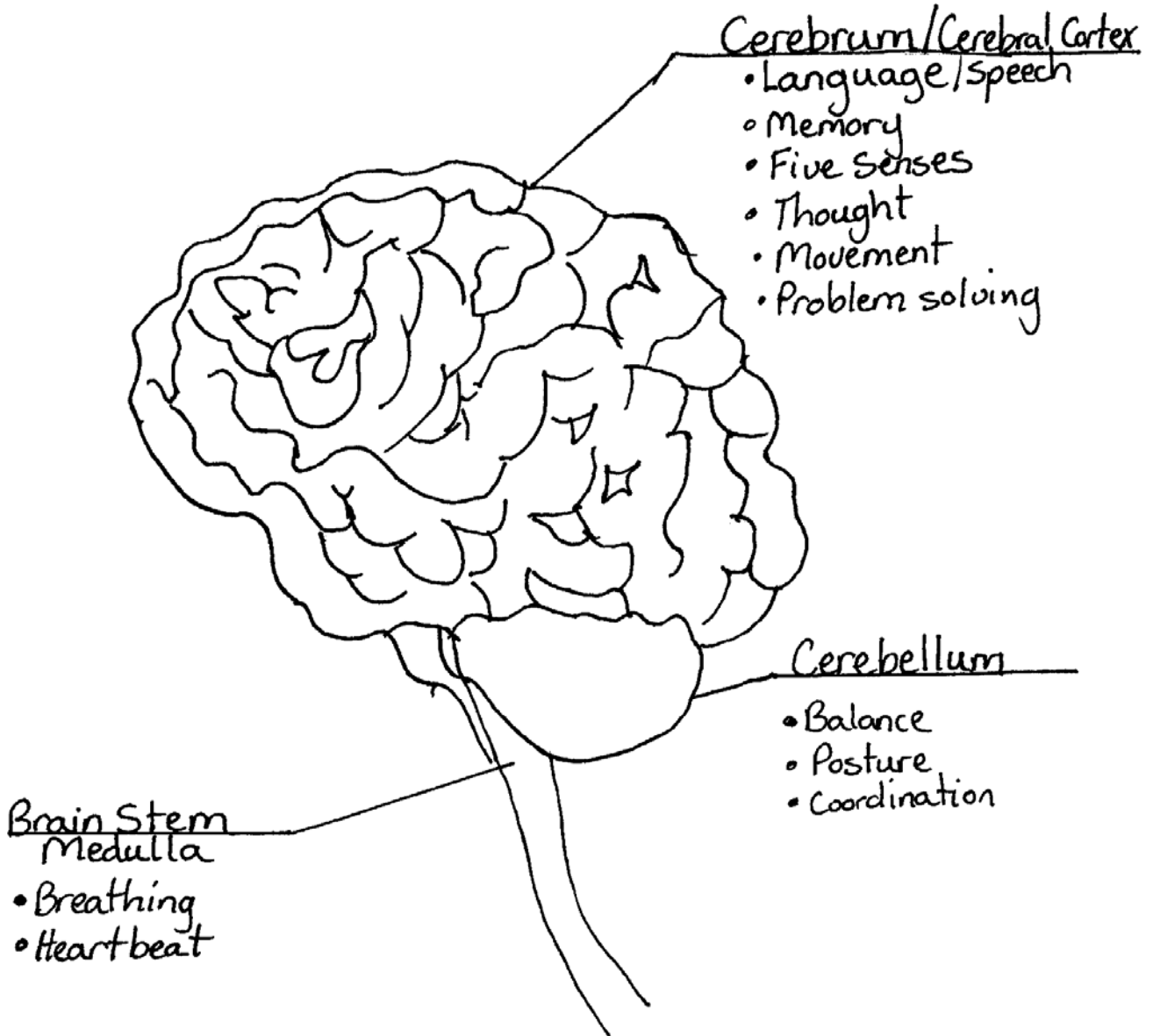
Appendix G

Parts of the Brain



Appendix H

Parts of the Brain Answer Key



Appendix I

You've Got Nerves Activity

Directions: Unfold a paper clip so that it has two points. Measure the two points so that they are 2 cm apart and are even with each other. Tell your partner to close his/her eyes. Very lightly touch the two points of the paper clip to the back of your partner's hand. Ask your partner if he/she felt one or two points. If they respond that they felt only one point, spread the paper clip apart just a little bit and try again. Keep going until you find the distance at which your partner first feels two points of the paper clip. Record the measurement between the two points of the paper clip at that point. Before you touch the part of the body, record a guess (hypothesis) of what the distance will be between the paper clip points when your partner begins to feel two points. Record your results in the table below. Then, using this information give a conclusion as to what parts of your body are more sensitive to touch and why.

After you are done, switch jobs and have your partner try this activity with you.

Part of the body	How many centimeters apart do you think the points on the paper clip will be when your partner starts to feel two points?	How many centimeters apart were the paper clips points when you actually measured them?
Back of hand		
Arm		
Fingers		
Cheek		
Nose		
Leg		

Conclusion:

What another name for the medulla? What job does it have?

What job do nerves perform?

Appendix J

Reflex Activity

The Ruler Drop

Directions: Work with a partner on this activity. One person needs to hold the ruler. This person is the dropper. Have the other person hold out their hand so that it is just touching the bottom of the ruler. This person is the catcher. The dropper should drop the ruler without notice. The catcher needs to catch the ruler as soon as it drops. Measure the distance from the bottom of the ruler to the point where the catcher grips the ruler. Do this three times, and then switch jobs. Record the results in the table below. Your partner should record the results as well.

Student Name	Trial Number 1	Trial Number 2	Trial Number 3

Do the catcher's reflexes improve with each try?

Appendix K

The Nervous System Test

1. List the three main parts of the nervous system.

a. _____

b. _____

c. _____

2. Give an example of a situation in which your reflexes would be needed.

3. Three things that the cerebral cortex controls are _____,
_____, and _____.

4. Three functions that the cerebellum controls are _____, and
_____, and _____.

5. The _____ connects the spinal cord to the rest of the brain.

6. _____ deliver messages from the brain to the rest of the body.

7. Tell one new and interesting thing that you learned about the brain.

Bonus Question: On the back of this test, draw a picture of a person and label the parts of the nervous system.

Appendix L

The Nervous System Test Answer Key

1. List the three main parts of the nervous system. **(three points total)**
 - a. ___ Brain_____
 - b. ___ Spinal Cord_____
 - c. ___ Nerves_____

2. Give an example of a situation in which your reflexes would be needed. **(one point)**
 Any examples of times when the reflexes need to respond in order to avoid pain.

 Example: hot stove_____

3. Three things that the cerebral cortex controls are: **(three points total)**

 Accept any three of the following: Language/Speech, Memory, Five Senses, Thought, Movement, and Problem Solving

4. Three functions that the cerebellum controls are: **(three points total)**

 balance_____, and posture_____, and coordination_.

5. The medulla/brain stem_____ connects the spinal cord to the rest of the brain. **(one point)**

6. Nerves_____ deliver messages from the brain to the rest of the body.

(one point)

7. Tell one new and interesting thing that you learned about the brain. **(one point)**

 Answers will vary._____

Bonus Question: On the back of this test, draw a picture of a person and label the parts of the nervous system.

Culminating Activity Resources

To obtain human and animal brains, either contact a medical university for donations or contact one of the companies below. This information is taken from the Neuroscience for Kids website (see bibliography).

Blue Spruce Biological Supply, Inc.
701 Park St.
Castle Rock, CO 80104
Phone: 1-800-825-8522
FAX: 1-303-688-3428

[Carolina Biological Supply Company](#) - An EXCELLENT Resource
2700 York Road
Burlington, NC 27215
Phone: 1-800-334-5551
FAX: 1-800-222-7112

Connecticut Valley Biological
82 Valley Rd., P.O. Box 326
Southampton, MA 01073
Phone: 1-800-628-7748 or 1-413-527-4030
FAX: 1-800-355-6813

[Fisher Scientific](#)
Phone: 1-800-766-7000
Hilltop Lab Animals, Inc.
Hilltop Drive
PO BOX 183
Scottdale, PA 15683
Phone: 1-800-245-6921
FAX: 1-724-887-3582

Culminating Activity Resources, Continued

[Nasco](#) Sheep brain = \$5.50

Also has brain models and charts

Plastination Laboratory, University of Michigan

[Dr. Roy A. Glover, Director](#)

Department of Anatomy and Cell Biology

3606 Medical Science II Bldg.

Ann Arbor, MI 48109-0610

Phone: 1-313-764-4359

FAX: 1-313-763-1166

[Sargent-Welch](#)

(Sheep brain = \$5.25-7.45 ea; Brain/Skull Model = \$14.35; Plastic Human skulls = \$75.00-231.00; Other brain models = \$330.00-381.00; Spinal cord model = \$198.00)

(Microscope slides of brain and nerve = \$2.49-6.29 ea)

[Skulls Unlimited](#)

Skulls of reptiles, birds, and mammals

Taconic Co.

273 Hover Ave.

Germantown, NY 12526

Phone: 518-537-6208

FAX: 518-537-7287

Zivic-Miller Laboratories, Inc.

P.O. Box 280

Zelienople, PA 16063

Phone: 1-800-422-5227

FAX: 412-452-5200

Appendix N

Extension Activities

Technology Extension #1:

If you have use of computers, allow the students to go on to the website Neuroscience for Kids. <http://faculty.washington.edu/chudler/neurok.html>

There are many activities for students to perform on their own, especially on reflexes and nerves. There is also a listing of songs about the brain put to familiar tunes. There are also some interactive sites where the students can “probe the brain” to find the connections to certain parts of the body and additional sites for further research.

Technology Extension #2:

Have the students create a computer model of the brain using publisher or animation programs such as anim8tor.com.

Appendix O

Rubrics

Paragraph Rubric

Highly Proficient	Proficient	Low Proficiency	Below Proficiency
<p>The student has included a topic sentence and conclusion sentence. The student correctly identifies the three parts of the nervous system, and the basic functions of each of those parts. The paragraph is well written and grammatically correct.</p>	<p>The student has included a topic sentence and conclusion sentence. The student has correctly identified almost all of the parts of the nervous system and the function of each of those parts. The paragraph is mostly well written and grammatically correct.</p>	<p>The student has forgotten either the topic sentence or conclusion sentence. The student has correctly identified some of the parts of the nervous system and their functions. The paragraph is readable, but could be better written.</p>	<p>The student has forgotten the topic sentence and/or the conclusion sentence. The student has identified few or none of the parts of the nervous system and their functions. The paragraph is not well written or grammatically correct.</p>

Activities Checklist

	Yes	No
Did the student follow all the directions properly?		
Did the student obtain logical results?		
Did the student work well with his/her team?		