

Do You Have a Grip on That?

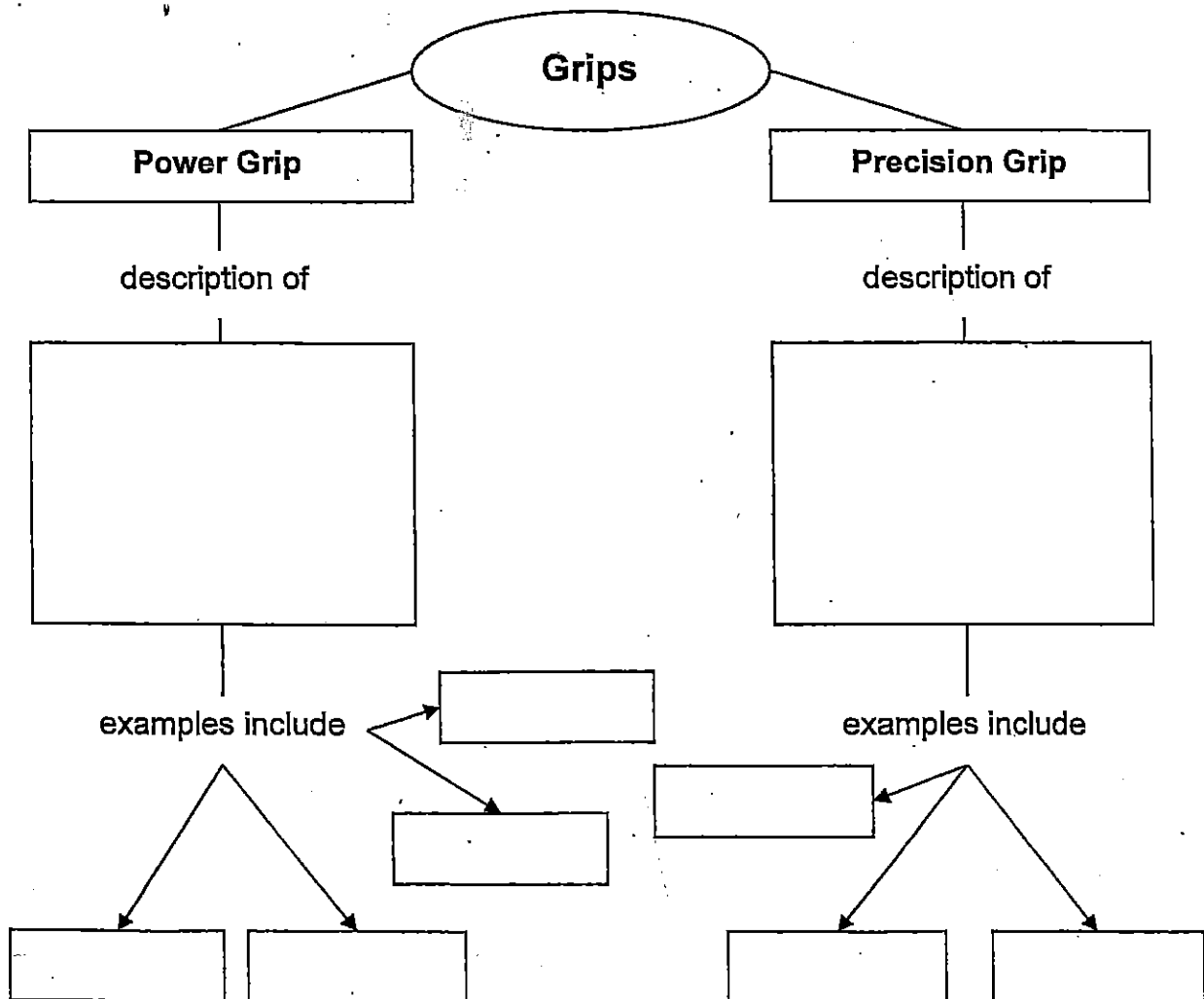
(pages 86-87)

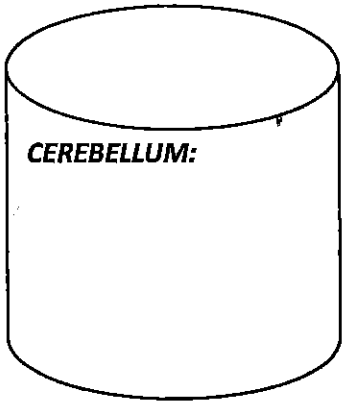
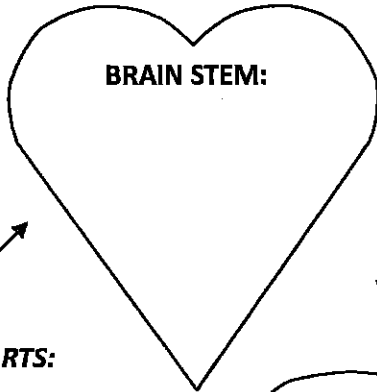
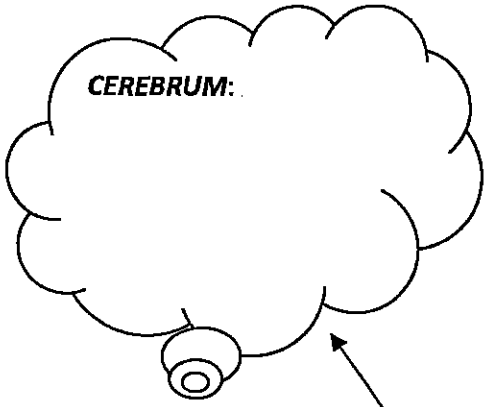
Purpose for Reading: To compare the two major categories of grips: power grips and precision grips.

Strategy: Parallel Note-taking (compare and contrast). Parallel note-taking involves a graphic organizer that is parallel to the organizational pattern of the essay text. This text is comparing two different categories of grips.

Directions:

1. Look at the graphic organizer and the words that are supplied.
2. As you read, add information to the appropriate boxes.
3. Feel free to add additional information (boxes, lines, terms, etc.) as you read.
4. Write a summary that explains your understanding of the two categories of grips.





BRAIN PARTS:

What do each control?

**MAPPING THE
BRAIN**

Essay page 88

Who

What happened to him?



What we learned:

Name: _____

Resulted in:

1. _____

2. He became _____

Brains and More Brains

(pages 89-92)

Purpose for Reading: To compare the left and right hemispheres of the cerebrum.

Strategy: Parallel Note-taking (compare and contrast). Parallel note-taking involves a graphic organizer that is parallel to the organizational pattern of the essay text. This text describes what each hemisphere of the cerebrum controls.

Directions:

1. As you read, add appropriate information to each column.
2. Write a summary that explains your understanding of both hemispheres.

Left Hemisphere In most individuals, what does the left hemisphere of the brain control?	Right Hemisphere In most individuals, what does the right hemisphere of the brain control?



What humans seem to have accomplished is the trick of keeping the brain growing at the embryonic rate for one year after birth. Effectively, if humans are a fundamentally precocial species, our gestation is (or should be) 21 months. However, no mother could possibly pass a year old baby's head through the birth canal. Thus, human babies are born "early" to avoid the death of the mother. Walker and Shipman (1996, p. 222) write:

"Humans are simply born too early in their development, at the time when their heads will still fit through their mothers' birth canals. As babies' brains grow, during this extrauterine year of fetal life, so do their bodies. About the time of the infant's first birthday, the period of fetal brain growth terminates, coinciding with the beginnings of speech and the mastery of erect posture and bipedal walking."

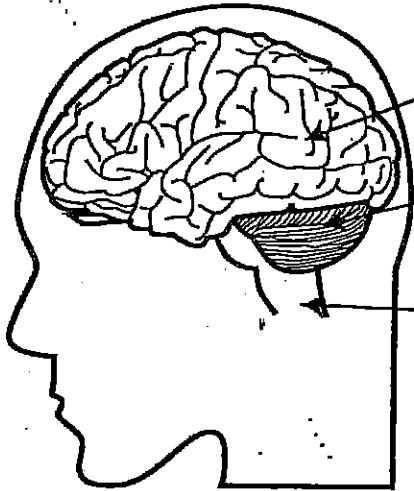
This pattern of growth has huge implications. Every other primate doubles their brain weight from birth to adulthood. But due to the early birth of humans, we triple our brain's birth rate. Our last 12 month of fetal growth rate of the brain occurs outside the sensorially deprived womb. The vast quantities of sensory input during the first year of life affects the rate and nature of the neural connections. Because of this year of helplessness, parents must provide close physical and emotional support for the infant. Unlike chimp babies who can cling to their mother's fur, human infants cannot even hang on to mother in spite of having the hand reflex. The mother has no fur because she sweats and she sweats because of a big brain which is why she gives birth to her child early. This early birth then requires the mother to care for the infant and increases the bond between mother and child which partially makes us human."

(from <http://home.entough.net/dmd/sweat.htm>)

Name _____

What Does What?

Review all you know about the three main parts of the brain and what they control by using the information below.



The largest part of the brain is the **cerebrum**. The cerebrum contributes to your thinking, your memory, and your five senses.

The **cerebellum** controls your movement, balance, and posture.

The **brainstem** is the lower part of your brain. Some of the things it controls are your breathing, heart rate, blood pressure, digestion, and body temperature.

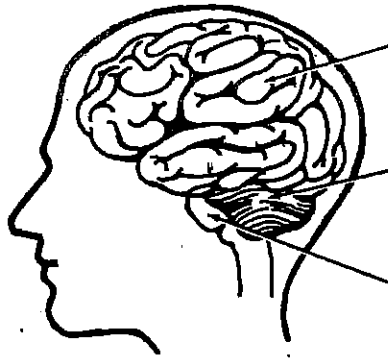
Read each activity below, and decide which part of the brain is responsible for that activity. Write cerebrum, cerebellum, or brain stem on the line.

1. Remembering to give your teacher a note _____
2. Tasting your favorite ice cream _____
3. Controlling your heartbeat _____
4. Standing up straight _____
5. Thinking about a math problem _____
6. Breathing faster during a soccer game _____
7. Smelling an onion _____
8. Maintaining a normal body temperature _____
9. Balance on a skateboard _____
10. Dancing at a recital _____

Name _____ Date _____ Class _____

HUMAN NERVOUS SYSTEM

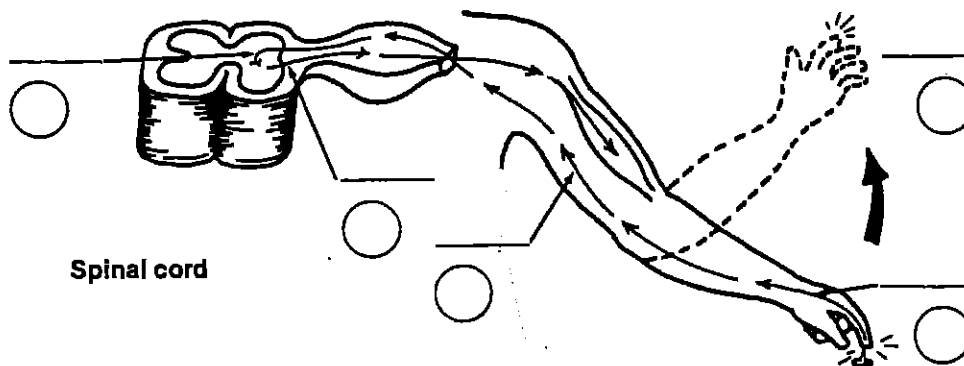
6. Complete this chart of the human brain.



a. Brain part b. Voluntary or involuntary	Job
a. _____ b. _____	_____ _____
a. _____ b. _____	_____ _____
a. _____ b. _____	_____ _____

7. a. Label the drawing of a reflex below using the letters of the statements listed here.

- A. Message moves from spinal cord to arm muscle.
- B. Message moves from finger to spinal cord.
- C. Message reaches and enters spinal cord.
- D. Muscle contracting pulls hand away.
- E. Finger picks up message of sticking pin.



b. Put the numbers 1 to 5 in the circles near the blanks to put the steps of the reflex in the correct order.

Name _____ Date _____ Class _____

HUMAN NERVOUS SYSTEM

3. The diagrams below show the path that a message takes from the hand to the spinal cord and back again. One is incorrect. It has two major errors.

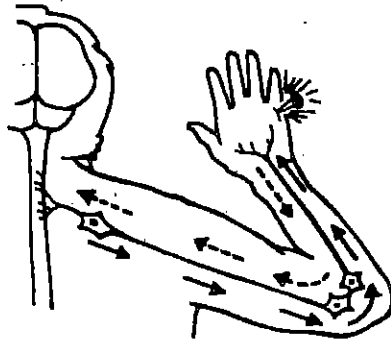


Diagram A

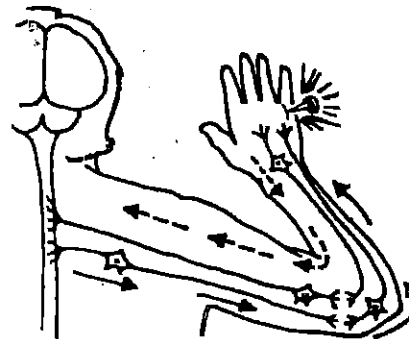


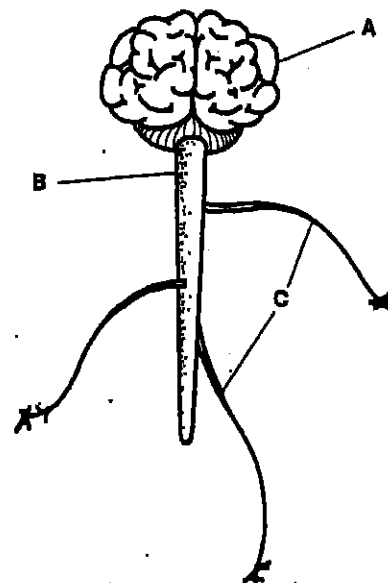
Diagram B

- Which diagram is incorrect? _____
- Describe the two major errors? _____

4. If the statement is true, place a check mark in the space provided. If it is false, change the underlined word to one that will make the statement true and write it down.

- _____ a. When a message reaches the tip of an axon, a chemical is released.
- _____ b. The nucleus is a small space between the axon of one neuron and the dendrite of another neuron nearby.
- _____ c. A message moves along a neuron from the dendrite to the axon.

5. Examine this diagram. It shows a simple sketch of the human nervous system. Put the correct letter in the blank to identify the part being described.



- Part that sends and receives messages to and from all body parts _____
- Protected by your vertebrae _____
- Protected by your skull _____
- Carries messages from skin to spinal cord _____
- Spinal cord _____
- Body nerves _____

Compare the regions of the brains of the 6 organisms. Compare the size and texture of the different regions of the brains. Fill in the following charts.

ANIMAL	CEREBRUM	CEREBELLUM	OTHER
FISH			
AMPHIBIAN			
REPTILE			
BIRD			
MAMMAL			
HUMAN			

	CEREBRUM	CEREBELLUM	BRAIN STEM
FUNCTION/JOB			
VOLUNTARY or INVOLUNTARY			

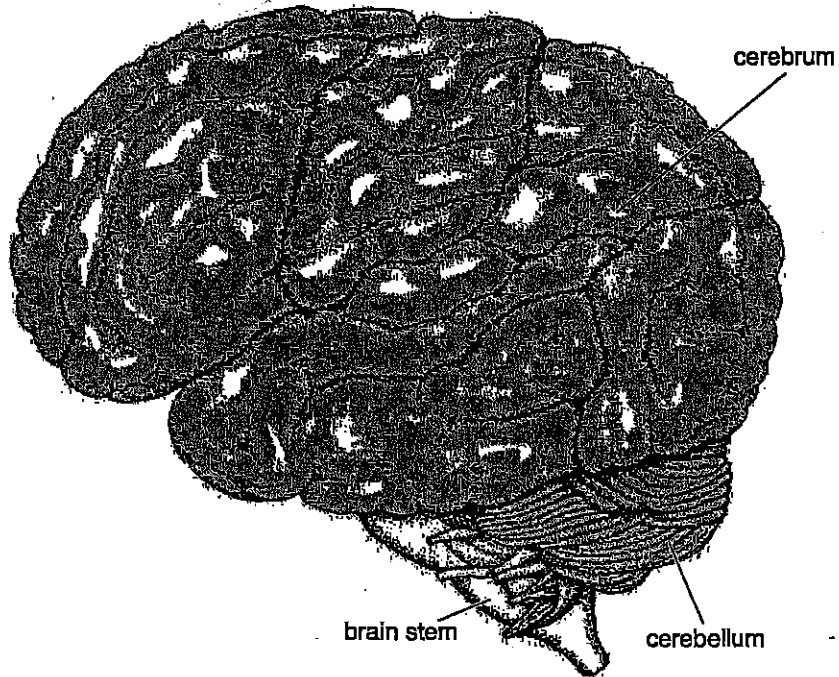
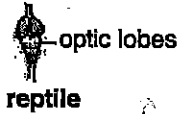
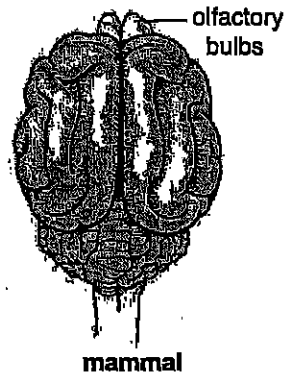
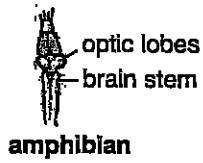
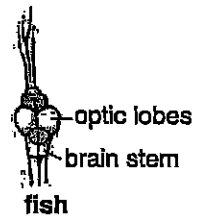
Complete the following questions.

1. Do you observe anything about the human cerebrum that makes it distinctive from the others? If so, what?
2. Consider the cerebellum of each animal. Which animals would you expect to have well developed cerebellums and why? Do not use the animals listed on this activity?

BRAIN COMPARISON

Transparency 1

Figure 1.4



life-sized side view of human brain

Name _____ Period _____

Biology Study Guide---Chapter I

Good Luck ☺

Matching: Write the letter of the *best answer choice* on the line next to the description. Answers CAN be used more than once!

- | | |
|---|------------------------|
| 1. _____ The largest part of the human brain. | A. Cerebellum |
| 2. _____ This part of the brain controls heart beat. | B. Right hemisphere |
| 3. _____ Responsible for a good sense of smell. | C. Left hemisphere |
| 4. _____ This part of the human brain keeps us "balanced." | D. Olfactory bulb |
| 5. _____ This part of the human brain stores memory. | E. Optic lobe |
| 6. _____ This part of the brain has a lot of "folds." | F. Corpus callosum |
| 7. _____ Responsible for excellent "vision" in animals. | G. Neuron |
| 8. _____ All animals have this part of the brain. | H. Medulla /brain stem |
| 9. _____ Nerve fibers that connect the left and right hemispheres of the brain. | I. Cerebrum |
| 10. _____ A nerve cell. | J. Bipedal |
| 11. _____ Controls the right side of our bodies. | K. Voluntary |
| 12. _____ This part of a neuron releases a neurotransmitter. | L. Involuntary |
| 13. _____ Word that means "we can not control it." | M. emotions |
| 14. _____ This part of the human brain is responsible for "thinking." | N. axon |
| 15. _____ Word that means "walking upright on two feet." | O. dendrites |

Fill-in: Write the *best* answer choice on the line provided to complete each sentence.

16. The _____ can carry messages to the brain; it is also responsible for "reflex" behaviors.

17. The _____ System allows us to detect changes (stimuli) around us and respond to them.

18. Because humans have a/an _____, they can touch each fingertip to their thumb.

19. The two main types of grips that humans have are called the _____ and _____ grips.

20. _____ is defined as the behaviors and beliefs that are shared by a group and passed on from one generation to the next.

21. Two traits that separate humans from other primates are the _____ and _____ movement.

22. The chemicals that termites "tracked" in the lab are called _____.

23. The part of the cerebrum that is responsible for "feeling sensations" is called the _____.

24. Draw 2 neurons in a row. Label the diagram using the following terms:

Axon
Dendrites
synapse

direction of signal(→ or ←)
Nucleus
neurotransmitter

25. Tell which is the "stimulus" and which is the "response."

Mary pulled her hand away from the fire when she felt the heat.

Because someone rang my doorbell, my dog barked loudly.

John jumped when he felt the bug crawl on his leg.

26. Phineas Gage:

Doctors thought that Gage had only lost the sight in one eye, after his accident. But they soon realized that his good-nature was gone and he was now

_____ and _____ because the metal rod had damaged the front of his _____ that controls social interactions and personality.