LAB #____Nervous System

Lab Instructor_____ Name_____
Date _____ Period_____

Objective: To study the human nervous system and brain

******Use full sentences when answering all questions.******

Pre-Lab

Read the entire lab descriptions and, if needed, the textbook to answer the following questions.

1. Describe the knee-jerk reflex. Include organs involved. Be specific and detailed.

2. Which hemisphere of your brain do you think is dominant? Explain your reasoning.

3. Give an example of trial and error learning that you have seen or experienced.

LAB ----------

Materials

Paper, pencil, index card, metric ruler, stop watch

A. Working in pairs demonstrate the knee jerk reflex arc. Follow your teacher's instructions.

1. Offer two possible explanations that might account for no response in an individual being tapped on the patella.

2. What are some ways the passing of a nerve impulse can be altered?

B. Dominant side of the brain

The human brain is divided into a left and a right side (hemisphere). Many things that you do with the right side of your body are controlled by your brain's left hemisphere. Many things that you do with the left side of your body are controlled by your brain's right side. If much of what you do is done by your body's right side, your dominant brain side is the left hemisphere. If much of what you do is done by your body's left side, your brain's right hemisphere is dominant.

Look at the table below. For each item listed, place a check mark in either the Left or Right column depending on which side of your body you use most. If you use both equally, check both boxes.

Task	Writing Your Name	Waving Hello	Batting	Holding Spoon	*Walking Up Stairs	*Catch From Falling	*Skipping	*Start To Run
LEFT								
RIGHT								

**With which foot do you start the activity?*

In the space provided at right, draw a simple side view of a dog.

What direction does your drawing face away from? _____Left *or* _____Right

DIAGRAM OF DOG

1. Which body side seems to be your dominant side? Why?

2. Which side of your brain is dominant? How do you know?

3. Can a person have a brain without a dominant side? Explain.

Name_____

Period_____

C. Sense receptors: The Eye

The blind spot is the site where the optic nerve exits the back of the eye through the retina. There are no photoreceptors in this area. Both left and right eyes have a blind spot. Use the procedure below to demonstrate your blind spot.

On an index card, draw an **X** about 2.54 **cm** from the left side of the card. Draw an **O** about the same size 8 cm. to the right of the X. Hold your index card in front of you at arm's length. Close your right eye and stare at the circle with your left eye. Slowly move the card toward you while continuing to stare at the circle, until the X "disappears" from view. This may take some practice to notice.

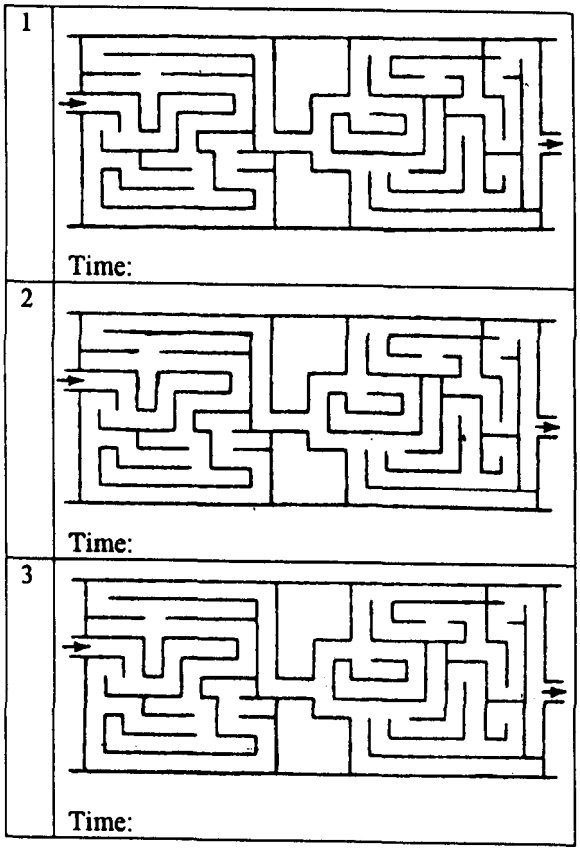
1. Name two kinds of photoreceptors found in the retina and the function of each.

2. Propose why you cannot see images that fall on the site where the optic nerve enters/exits the eye.

3. Why do you not notice the blind spot in the course of normal vision? (Hint: Try steps again with both eyes open)

D. Learning

Normally ants leave their nests to search for food. Of course they must then find their way back across the surface to the nest. An ecologist interested in behavior wished to study how ants "learned" to navigate across the ground, since this is basic to the efficient operation of the ant society. You can simulate how ants learn by trial and error by seeing how quickly you can go through the mazes below. Use a pencil to show your path. Have a partner time you (in seconds) as you complete each maze in succession. Cover completed mazes with index card as you finish them, so you will not be tempted to copy.



Summarize your results in a **bar graph** below, with a title and axes labeled and numbered in even increments.