

Nervous System Mini- Lab Answer Sheet

One of the basic functions of all living things is the ability to respond to things in their environment. For living things, the nervous system was developed for this purpose—to allow living things to respond to their environments. In humans, the brain receives and interprets information about the external and internal environments of the human body. This information is received by receptors and organs throughout the body. Anything that has an effect on a living thing is called a **stimulus** (plural: stimuli). **Receptors** are nerve endings that detect stimuli in one’s environment. We have different kinds of receptors on our body. We have receptors for touch, temperature, and pain, among other things. A **response** is your body’s reaction to a stimulus. One of the basic functions of living things is the ability to respond to stimuli from their environment, which they detect using receptors on and in their bodies. An example of a stimulus is when you get hit. The hit is detected by receptors, and these receptors send messages to the brain. In turn, the organism can respond to being hit can be jumping back, or flinching.

In this activity, you will be visiting different lab stations having to do with the nervous system.

Keywords: Define the following:

Stimulus: _____

Receptor: _____

Response: _____

LAB STATION #1: REACTION TIME

Data Table: Reaction Times

	Normal Conditions	Distracted Conditions
Trial	cm ruler fell	cm ruler fell
1		
2		
3		
4		
5		
Total		
Average		

CONCLUSION QUESTIONS:

1. What is meant by **reaction time**? _____
2. a. What is your average reaction distance under normal conditions? _____
 b. What is your average reaction distance under distracted conditions? _____
3. Under which condition, normal or distracted, was your average reaction time shorter? _____

4. a) What may happen to a person's reaction time if he or she is distracted while driving a car?

- b) Explain why this is dangerous. _____

5. a) What is a stimulus? _____
b) What is the stimulus in this activity? _____
6. a) What is a response? _____
b) What is the response in this activity? _____

LAB STATION #2: LEARNING PUZZLE

Data Table: Trial Times

TRIAL#	TIME (in seconds)
1	
2	
3	
4	

CONCLUSION QUESTIONS:

1. What is **trial and error learning**? _____
2. Which one of the 4 trials of this experiment involved trial and error learning and why?

3. a) Which trial, 1st, 2nd, 3rd, or 4th, took the least time? Why?

4. Can an airplane pilot rely on trial and error learning? Why or why not?

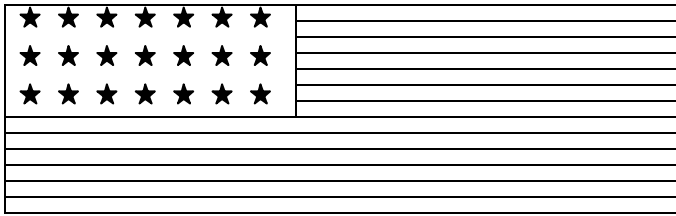
5. Describe a situation in which you learned through trial and error learning.

6. a) What was the stimulus for you in this activity? _____
b) What was your response to the stimulus in this activity? _____

LAB STATION #3: FOOLING YOUR SENSES

1. Which cylinder is the largest, A, B, or C? _____

2. Cylinder A= _____mm Cylinder B= _____mm Cylinder C= _____mm Were you right or wrong in #1? _____ Why do you think people mistake the sizes of these cylinders?
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3. What did you see on the blank piece of paper? _____

4. Make a hypothesis on why you saw what you did on the blank piece of paper.
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5. Fig. 3: Do you see a white triangle? _____ Is there a white triangle actually drawn on the diagram? _____
6. Fig. 4: Do you think that the lines across the diagram could meet without the resulting line being bent? _____ Now try connecting the two lines with the edge of a sheet of paper. Do the 2 lines meet? _____ Are the 2 lines really bent? _____
7. Fig. 5: What do you see? _____ When you look a second time, do you see anything different? (Look carefully.) What do you see? _____ When you look at the figure, do both figures ever appear at the same time? _____
8. Figure 6: What do you see? _____ Look at the figure again. Do you see anything different? What do you see? _____ When you look at the figure, do both figures ever appear at the same time? _____

CONCLUSION QUESTIONS:

1. Which of the illusions in this activity were optical illusions? (Identify by figure #.)
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2. Sometimes a driver sees water on a dry highway. Why is this water an optical illusion?
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LAB STATION #4: REFLEXES

Describe what happens when you try to resist the reflex. _____

Draw the reflex arc below. Be sure to include all five parts.

CONCLUSION QUESTIONS:

1. What is a reflex? _____

2. When you first responded to your partner's knee tap, did you have to think about causing your knee to jump? In other words, did you have to think to have a reflex?

3. a) Another example of a reflex is when someone or something tries to touch your eye. How do you react when this happens? (A common situation of this is when a ball or another object is coming toward your eye. What do you do?)

b) Is this action something that you must think about before you do or is it automatic?

c) How is this an advantage? _____

4. If you had to think to produce a reflex action, how would this affect its speed?

5. Turn to page 884 in the book. Look at table one. Time how long it takes for each partner to read the words from column 1. Then try column 2. Record YOUR info below.

Stroop Effect Color Test

Time to Read Column 1 (sec)	Time to Read Column 2 (sec)

6. How do you think a person who is color blind would do in this test ? _____

LAB STATION #5: TOUCH, ONE OF THE FIVE SENSES – ACTIVITY 1

Activity #1 - Data Table #1: 2-Point Thresholds of Different parts of the Hand –

At what distance do you not feel 2 toothpicks?

Hand Location	2-Point Threshold (in mm)
Inside the middle finger (1)	
Back of middle finger (2)	
Inside palm (3)	
Back of hand (4)	
Inside wrist (5)	
Back of wrist (6)	

CONCLUSION QUESTIONS:

1. What are **receptors**? _____
2. What are **touch receptors** (like those found in your hand)?

3. a) Which part of your hand has the lowest 2-point threshold? _____
b) Which part of your hand is the most sensitive? _____
c) Which part of your hand has the most nerve endings (touch receptors) on it? _____
4. a) Which part of your hand has the largest 2-point threshold? _____
b) Which part of your hand is the least sensitive? _____
c) Which part of your hand has the least nerve endings (touch receptors) on it? _____
5. Which part of your hand would you use to guess the identity of an object by only touching it (eyes closed) and why? _____
6. Besides receptors for touch, name 2 other types of receptors found on your body.

LAB STATION #6: DETERMINING BRAIN DOMINANCE

Keywords: Define the following:

Left brain dominant: _____

Right brain dominant: _____

Complete the chart. Follow the instructions carefully.

TASK	LEFT	RIGHT
1. Write name		
2. Wave 'Hello'		
3. Batting hand		
4. Thumb position		
5. Holds Spoon/ Fork		
6. Walk up stairs		
7. Catch from falling		
8. Skipping		
9. Standing		
10. Start to Run		
11. Dog draw (facing)		
12. Circle Drawing		
13. Dominant Eye		
** TOTALS=		



Draw a Dog

Which way is the dog facing?



Left hand

Place an arrow in the direction you made your circle



Right Hand

CONCLUSION QUESTIONS:

- 1) Which column in your table has the most check marks? _____
- 2) Which body side seems to be your dominant side, right or left? _____
- 3) The human cerebrum is divided into left and right sides.
 - a) Which brain side controls the left side of your body, right or left? _____
 - b) Which brain side controls the right side of your body, right or left? _____

The brain side that you see the most is said to be your dominant brain side. Which is your dominant brain side? (Remember that your dominant brain side is opposite your dominant body side)._____

LAB STATION #7: TOUCH, ONE OF THE FIVE SENSES – Part 2

Activity #2 – Data Table #2 Analyze the Location of Touch – With your eyes closed, have your partner mark your skin, and then try to hit the same location. Measure the difference.

Location	Distance off (mm)
Back of Hand	
Forearm	
Calf	
Neck	
Palm	

1. What location had the most accurate sense of touch? Why do you think it provided these results?

2. What locations had the worst? Why do you think it had these results?

3. Why weren't you able to hit the exact location? Do you think you ever could?

LAB STATION #8: THE HUMAN BRAIN

1. What is the cerebrum and what does it control? _____
2. How is the cerebrum related to the cerebral cortex? _____
3. Use figure 29.10 in your book to draw and label the various lobes of the brain.

4. Use the same figure and complete the chart:

Lobe of Brain	Location	Responsible for...
Frontal		
Parietal		
Temporal		
Occipital		

5. Why does your vision go blurry when you get hit in the back of the head?

6. What is the cerebellum and what does it control? _____
7. What are the parts of the brain stem and what does each control?
 - a) _____
 - b) _____
 - c) _____