

Adaptation of the Human Hand Lab

INTRODUCTION:

Living things have bodies that are adapted for the places they live and the things they do. Fish have gills so that they can remove oxygen that is dissolved in water. Most plants have green leaves which contain chlorophyll so that they can make food. Jellyfish have stinging cells to capture prey. Birds have hollow spongy bones so that they will be light enough to fly. Arctic animals have layers of fat and thick coats of fur to keep warm in the frigid Arctic climate. There are hundreds of examples of ways that organisms are adapted for a successful lifestyle.

Humans, too, are adapted for the things they do. One of our adaptations is our hand. Humans, as well as monkeys, gorillas, and other primates, have a hand that can grasp objects. In this lab exercise, you will perform several common actions. Then you will change your hand so that it resembles that of a non-primate animal. You will determine whether or not you can successfully perform the same actions. This will demonstrate how the human hand is adapted for the actions it performs. You will work with a partner to do this exercise.

PROCEDURE:

1. Do each of the following activities and have your partner time how long it takes you to do each one. Record the times in the data table on the next page.

A. Tie a knot in a piece of string.

B. Remove both shoes and then put them back on.

C. Begin with your locked cell phone, when the timer starts send a message to one of your friends. The text should read: " I'm in Life Science and this lab is awesome! "

D. Stack 20 coins of various sizes on top of each other.

E. Manually sharpen a pencil.

F. Write your full name and today's date on a piece of paper.

2. Using masking tape, have your partner tightly tape each of your thumbs to the palm of the hand.

3. After your thumbs are securely taped, try each of the activities listed in Procedure 1 again. Time each activity as you did before and record the time in the data table. If an activity is not done in two minutes, record the word "unsuccessful."

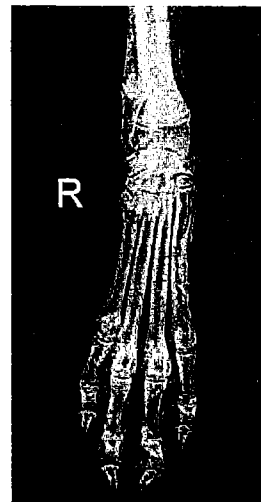
4. It's time to switch roles. If you were the timer, you are now the active participant.

DATA TABLE: *Time Taken to Perform Various Tasks*

	Time (seconds)			
	THUMBS FREE		THUMBS TAPED	
<u>Names</u>				
<u>Tasks</u>				
Tie knot in string				
Remove and replace shoes				
Texting				
Stack 20 coins				
Sharpen a pencil				
Write full name and date				

CONCLUSIONS:

1. Explain why dog and cat paws are not adapted for doing the six actions you tested. The image to the right is an x-ray of a dog's paw



2. What are cat and dog paws adapted for?

3. Describe how your hand is adapted for doing the actions you tested.

4. You have an opposable thumb. Explain what you think this means.
