



Name \_\_\_\_\_ Hr \_\_\_\_

## Lab: Balloons and Lung Capacity Experiment

### **BACKGROUND:**

Your respiratory system is a group of organs that work together to take oxygen into your body and get rid of carbon dioxide. Your body can complete this process by both breathing and respiration. Breathing is the physical process of inhaling and exhaling. Respiration is the process by which a body gets and uses oxygen and releases carbon dioxide and water. This process is very important because your body needs oxygen in order to get energy from the foods you eat.

When you breathe in air, your lungs are the pair of organs in your chest that inflate and deflate as air gets sucked into and pushed out of your body by your diaphragm.

Your lung capacity is the total amount of air your lungs can hold at one time. Lung capacity is different for people depending on their age, height, weight, and their physical fitness. Today you will be doing an experiment to test the instant effects of exercise on your lung capacity.

### **MATERIALS:**

One circular balloon per student

String

Ruler

### **PROCEDURE:**

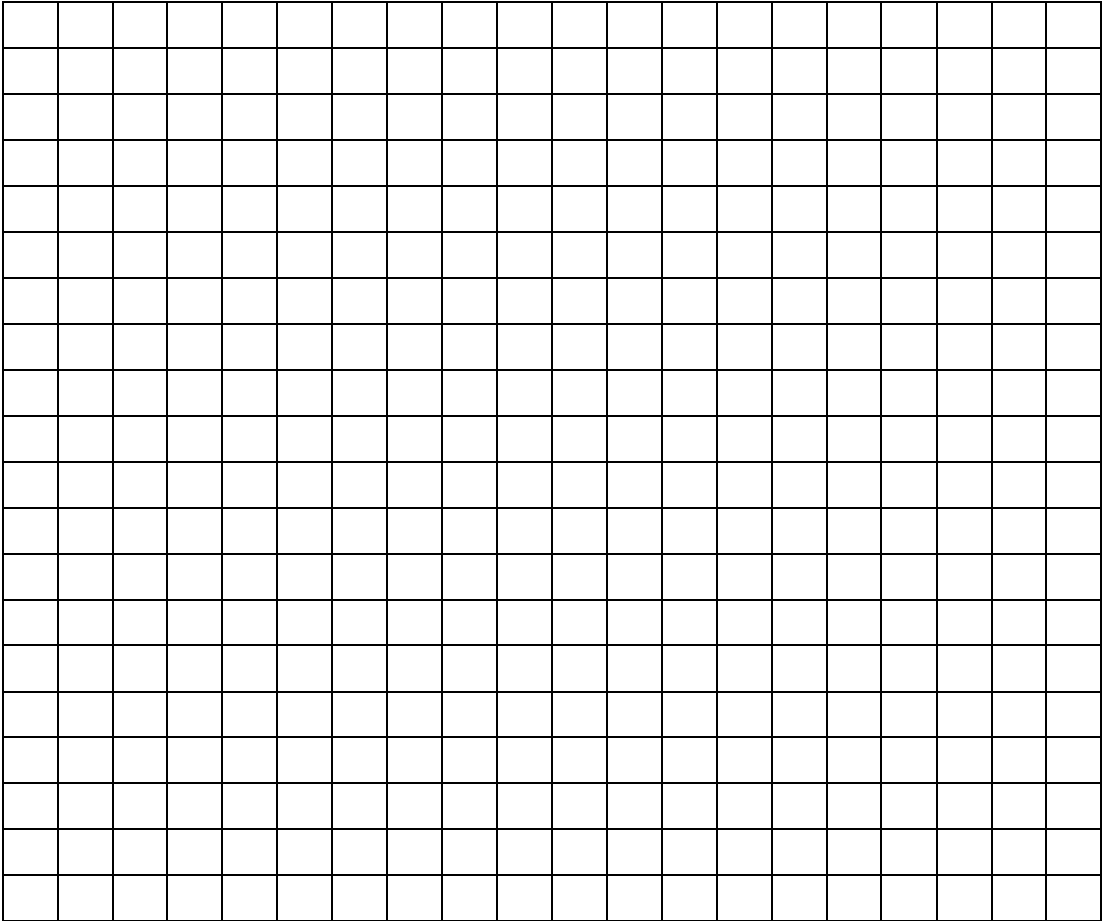
- 1) Take 1 BIG breath.
- 2) Exhale into the balloon. Make sure to only exhale once into the balloon.
- 3) Pinch the end of the balloon.
- 4) Have your partner measure the circumference of the balloon (in cm) using the method your teacher showed you.
- 5) Record this measurement in your data table.
- 6) With your partner do 5 jumping jacks.
- 7) Quickly exhale one breath into the balloon.
- 8) Pinch the end of the balloon.
- 9) Again have your partner measure the circumference of the balloon. Record this measurement in your data table.
- 10) Repeat steps 6-9 (increasing the amount of jumping jacks you do) until your data table is full.

**\*\* Important:** Do not rest between each set of jumping jacks.

Lung Capacity Over Time	
Number of Jumping Jacks	Circumference (cm)
0	
5	
10	
15	
20	
25	

Line Graph: Use the collected data to construct a line graph

Title: \_\_\_\_\_



Lab Follow-up Questions:

- 1) Describe the function of the lungs.
- 2) Contrast between breathing and respiration.
- 3) Explain the term lung capacity.
- 4) These 4 things affect a person's lung capacity.
- 5) The distance around your circular balloon is called its \_\_\_\_\_.
- 6) Look at your line graph. How did the jumping jacks affect your lung capacity?
- 7) After doing this experiment, what can you CONCLUDE about the instant effects of exercise on your lung capacity? (Answer in complete sentences)
- 8) Millions of people suffer from respiratory disorders (problems with their respiratory system). Asthma causes the bronchioles (small tubes in your lungs) to become narrow. Do you think a person with asthma would have a bigger, smaller, or the same lung capacity as a person without asthma? Why? (answer in complete sentences)