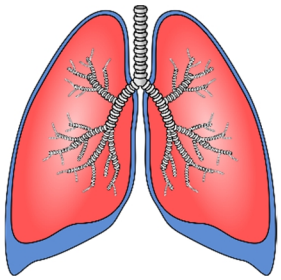
How much air can your lungs hold?



Question: How much air can your lungs hold?

Background Info: In order for our cells to work, we need oxygen and we need to get rid of carbon dioxide. This is where your lungs come in. When you breathe in you fill your lungs with oxygen, which then gets sent to your cells through your blood stream. When you breathe out you get rid of the carbon dioxide waste from your cells. How large is your lung capacity? In other words how much air can your lungs hold?

Knowing how much air your lungs can hold can help you determine how fit you are to do certain activities. You can actually train your lungs to hold more air, athletes tend to hold their breath longer and can take in more air. Some marine divers even increase their lung capacity so that they can hold their breath for 5 minutes!

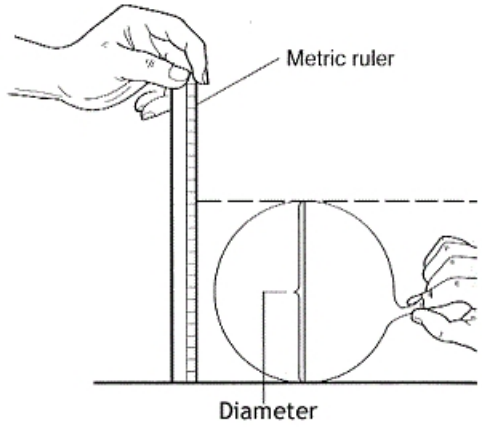
Somethings can decrease your lung capacity. For example, smoking can greatly reduce lung capacity making it hard for a smoker to go about their daily routine without losing their breath. Age, Fitness level and body position are also things that can reduce lung capacity.

Materials:

Regular 12" balloon String Ruler/Measuring Tape Calculator

Procedure:

1. Take a normal sized 12" balloon and stretch it for 30 seconds (sing the abc's once!)
2. Take a few deep breaths, slowly letting the air out.
3. Take as deep of a breath as you can and then blow all of the air, from one breath, into your balloon.
4. Hold the balloon closed with your fingers and measure its diameter, in centimeters, by holding a ruler up to it.

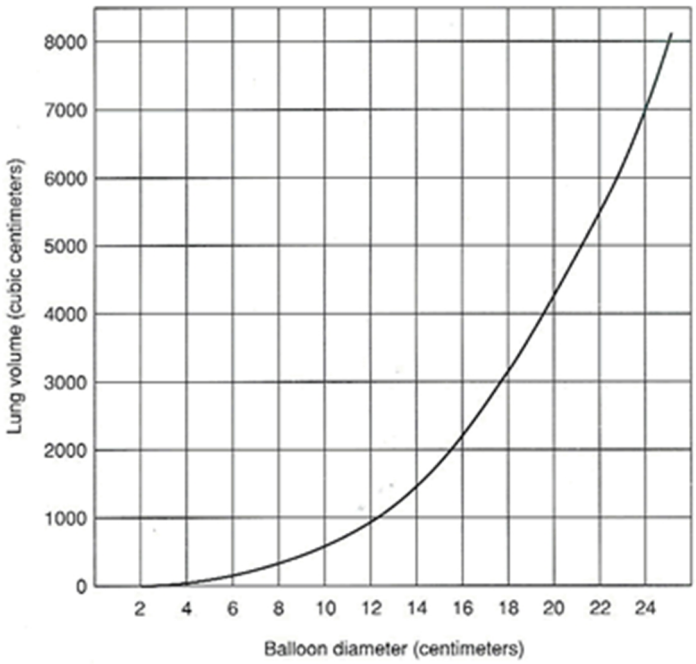


5. Record the number of centimeters in the data table below, under trial 1.
6. Repeat steps 1-5, four more times for a total of five trials.
   Note: It is always really important to repeat an experiment more than once. That way you know you didn't get your numbers by accident!

Data Table

Trial	1	2	3	4	5	Average
Diameter in Centimeters						
Volume						

7. Use the graph below to convert your balloon diameters to volume in cubic centimeters. Record under "volume" in the data table above.

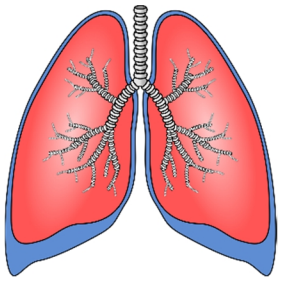


Questions and Conclusions:

What is lung capacity?

Who do you think might have a different lung capacity than you? Why?

Lung Capacity Lab 2



In lab 1 you learned about your lung capacity. Now you get to design your own investigation to find out who might have a bigger or smaller lung capacity.

Pick two different types of people whose lung capacity you would like to test. It could be girls vs. boys, athletes vs. musicians, kids vs. grown-ups, or whatever you think would be cool to test.

I will test: _____

This is your **Independent Variable,** that means this is the variable you are allowed to change to see what happens when you make a change.

Your **Dependent Variable** are the results you are looking for. In this case your dependent variable is **Lung Capacity.**

Question: _____

Hypothesis: _____

Materials:

Write your procedure. Make sure you include the details that will make this test fair. Have your parent check it before you draw your data table and begin to experiment.

Procedure:

Parent Initials

1. _____
2. _____
3. _____

4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

Draw your data table. Once your parent has checked this, you can begin your experiment!

Parent Initials

After you have collected your data, you should look at your numbers and figure out if your hypothesis was supported or not. If the numbers matched up to what you thought would happen in your hypothesis you would say that it was supported and then use the numbers to tell us why. If your hypothesis was unsupported that is completely okay! This is called your **Conclusion.** You should also talk about why your investigation is useful, how your experiment could have been improved and if there was anything this experiment made you curious about testing in the future.

Extension:

Make a bar graph from your data! When you are comparing different items the type of graph you should make is a bar graph.