

Lung Model

Category: Biology: Human Body

Type: Make & Take

Rough Parts List:

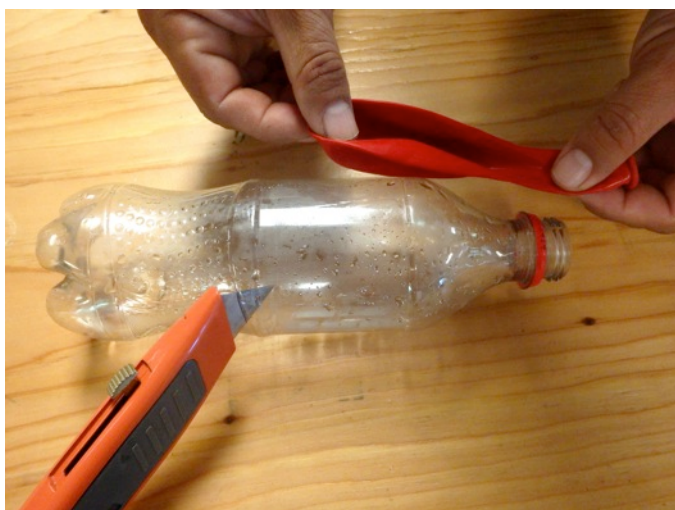
1	Single-size plastic drink bottle
2	Balloons

Tools List:

Scissors or box cutter

Video: https://youtu.be/Ai_uPeNBUfM

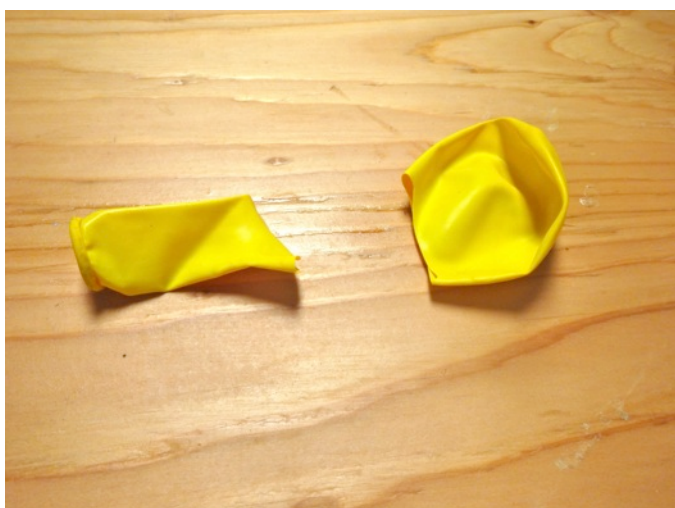
How To:



Cut a bottle into two pieces. Leave the top end long enough for a balloon to fit inside.



Wrap the mouth of the balloon over the mouth of the bottle.



Cut another balloon in half.



Slide the wide end of the balloon over the open

end of the plastic bottle.



Pull down on the balloon (diaphragm) to make the model inhale. The balloon inside the bottle (lung) will expand.

Push the diaphragm up into the bottle to make the model exhale. The lung inside the bottle will shrink.

Fine Points:

→ The balloons must fit tightly around the bottle for this model to work correctly.

Concepts Involved:

- Lungs are not muscles.
- The diaphragm is the muscle that moves up and down and draws air into the lungs.

Focus Questions:

1. What part of your body does the balloon inside the bottle represent?
2. What part of your body does the balloon on the outside of the bottle represent?
3. In which direction does your diaphragm move when you inhale?
4. In which direction does your diaphragm move when you exhale?
5. Describe the relationship between the movement of your diaphragm and the movement of your lungs.
6. Why do you think some people can hold their breath longer than others?

Elaboration:

The lungs are not muscles, they cannot move by themselves. The diaphragm muscle makes them work. You can consciously control your diaphragm for a few minutes, such as when you hold your breath or blow out a candle. But as soon as you forget about it, it goes back to working on its own.

The lung model in this project is very simple and surprisingly accurate. The inside balloon is like your lungs: it inflates when the bottom balloon, which is similar to the diaphragm is lowered. The bottle itself is like the rib cage, protecting the lungs. It would be more accurate if there were two lungs instead of one, if there was a heart in there with the lungs, if there were blood vessels connected to the balloons, and if the balloons were actually composed of millions of tiny balloons.

Different people have different sized lungs, and different people use oxygen at different rates. Pearl divers can have lungs much larger than usual, the result of breathing very deep in order to raise their oxygen capacity and maximize their time under water. If you breathe into a bag, you will soon convert all the oxygen in that volume of air into water and carbon dioxide. You need oxygen to live, so your body will begin to give you signals that you need more.

Links to k-12 CA Content Standards:

Grades k-8 Standard Set Investigation and Experimentation:

Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other strands, students should develop their own questions and perform investigations.