

Lung Model

Grade Level: 6

Time Required: 1 class period

Countdown:

- Flexible Straws
- Clear Plastic Cups (7, 8 or 9 oz.)
- Small Balloons
- Large Balloons

Suggested TEKS:	
Science -	6.13
Math -	6.13
Computer -	6.2
Suggested SCANS:	
Technology. Apply technology to task.	
National Science and Math Standards	
Science as Inquiry, Life Science, Science in Personal and Social Perspective, Observing, Communicating	

- Scissors
- Transparent Tape
- Rubber Bands

Ignition:

The respiratory system consists of lungs and air passages and is part of the cardiopulmonary system that supplies your body with oxygen and nutrients and removes carbon dioxide and other waste products produced within your cells.

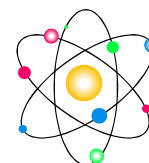
Each breath begins with a contraction of the diaphragm, a dome-shaped sheet of muscle that lies just below the lungs. When you inhale, your diaphragm contracts, or flattens downward. This contraction creates a lower pressure in the chest cavity. Normal outside air pressure forces air through the nose and mouth, down the trachea and into the lungs. When you exhale, your diaphragm relaxes, increasing pressure on the lungs and forcing air, containing carbon dioxide, out of the body.

What causes your diaphragm to contract and relax? Your brain controls everything you do. The small area within the brain stem known as the medulla regulates your breathing. It senses the amount of carbon dioxide present, the faster you breathe.



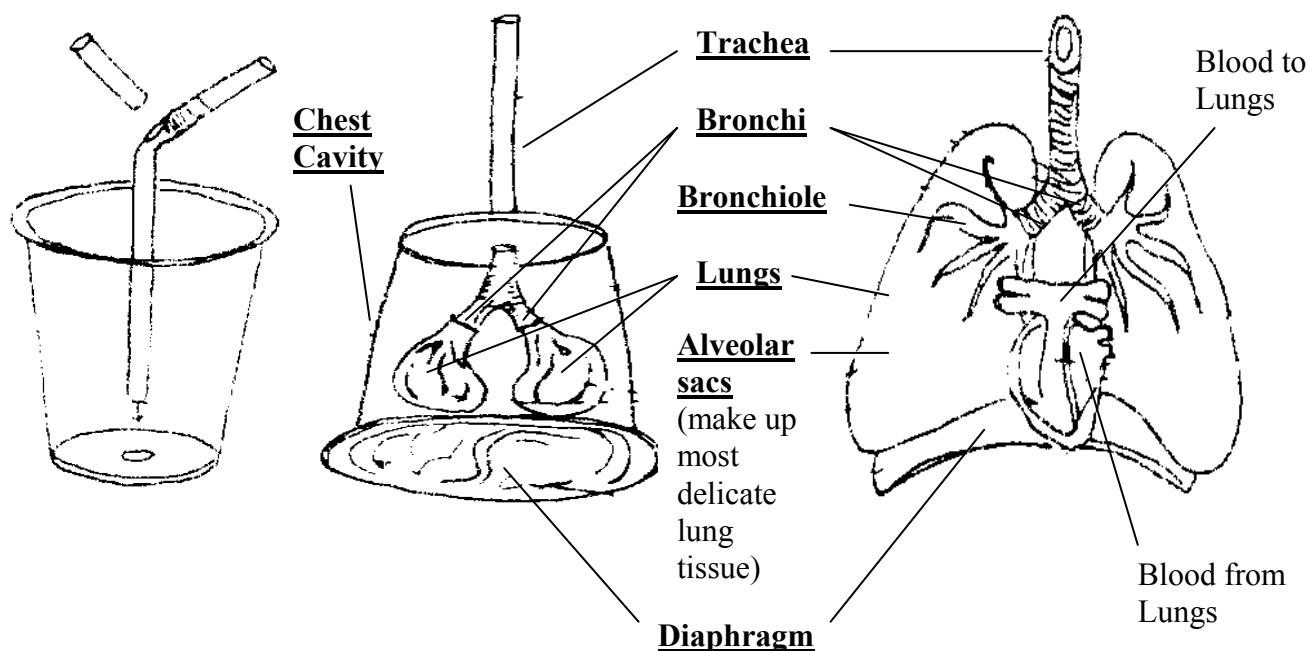
Computer:

Scientists believe the condition of apparent weightlessness to which astronauts are subjected during spaceflight may affect the respiratory system. See if you can find tests that have been conducted during space flight on astronauts or when the astronaut returns to earth and the cardiopulmonary system must readjust to gravity. What did these tests show?



Liftoff:

1. Divide the students into pairs. Each team should have a cup, a straw, scissors, tape, two small balloons, one large balloon, and a rubber band.
2. Make a hole in the bottom of the plastic cup with scissors.
3. Cut a 5-cm, inflexible section of a straw.
4. Make a small slight in the elbow of another straw.
5. Insert the 5-cm piece of straw into the slit to form a “Y”. Tape this joint to make it airtight.
6. Tape the small balloons to each end of the diagonal segments of the “Y”. These connections must be airtight.
7. Thread the vertical leg of the “Y” through the hole in the cup and seal with tape.
8. Cut the neck off the large balloon and discard. Cover the open end of the cup with the remainder of the balloon.



Have each student describe the function of the respiratory system and identify its parts. This lung model demonstrates the movement of the diaphragm which regulates the pressure in the chest cavity and that air flows into the lungs when air pressure in the chest cavity is lowered.



More Ideas:

- ◇ Research the cause of lung disease.
- ◇ Identify ways to prevent lung disease.
- ◇ Make a list showing examples of lung disease.
- ◇ Give examples of how astronauts might keep their lungs in shape during space flight.
- ◇ Measure Lung Capacity of an Average Student with the experiment:
http://lifesci3.arc.nasa.gov/SpaceSettlement/teacher/course/lung_capacity.html
- ◇ Play Circulatory System Relay. Obtain directions from:
<http://quest.nasa.gov/smores/teachers/act9.html>