



KS3

## Breathing and our lungs

We breathe a lot – An adult breathes approximately 12 to 16 times every minute. The lungs help us take in oxygen and expel carbon monoxide.

You will need:

- Disposable empty transparent bottle (10–16 fluid ounces) made of hard plastic (such as a sports drink bottle)
- Ruler
- Two balloons (8-inch balloons work well)
- Utility knife (have an adult help and use caution when using the knife)
- Adult helper
- Scissors



1. Cut the plastic bottle. Cut off the bottle's bottom so that when a balloon hangs inside the bottle from the spout there is about  $\frac{1}{3}$  to  $\frac{3}{4}$  of an inch of empty space below the balloon.

Place the cut bottle down on the wide opening. Lower a balloon into the bottle until only part of the balloon's neck sticks out. Fold the neck of the balloon over the top of the bottle. The balloon represents a lung





Turn the bottle over.

Make a knot in the neck of the second balloon. At the opposite side of this balloon cut off about a third of the balloon so you are left with a wide opening.

Stretch the wide opening of the cut balloon over the wide opening of the bottle. Pull the edges of the balloon far enough up the bottle so the balloon surface is gently stretched. Make sure that the knot is on the outside and located near the middle of the bottle opening.



Like an inflated balloon our lungs are full of air. We have two lungs, which are enclosed in the ribcage and protected by 24 ribs. When you breathe in, air flows into your lungs. When you breathe out, air flows out of your lungs. The balloon inside the bottle is like one of your lungs. The bottle is like your ribcage.

1. Breathing in - Hold the bottle so you can see the balloon inside (representing the lung). Gently pull down on the knot.



2. Breathing out - Let the knot come back to its neutral position and then gently push it in.



### How our lungs work

When you pulled and pushed the knot further the balloon inflated and deflated more. This mirrors what happens when a bigger volume of air is displaced when we breathe more deeply.

The organs in your body involved in breathing are collectively called the respiratory system. The lungs are most important parts of the respiratory system.