

Section 1

Understanding Life Systems

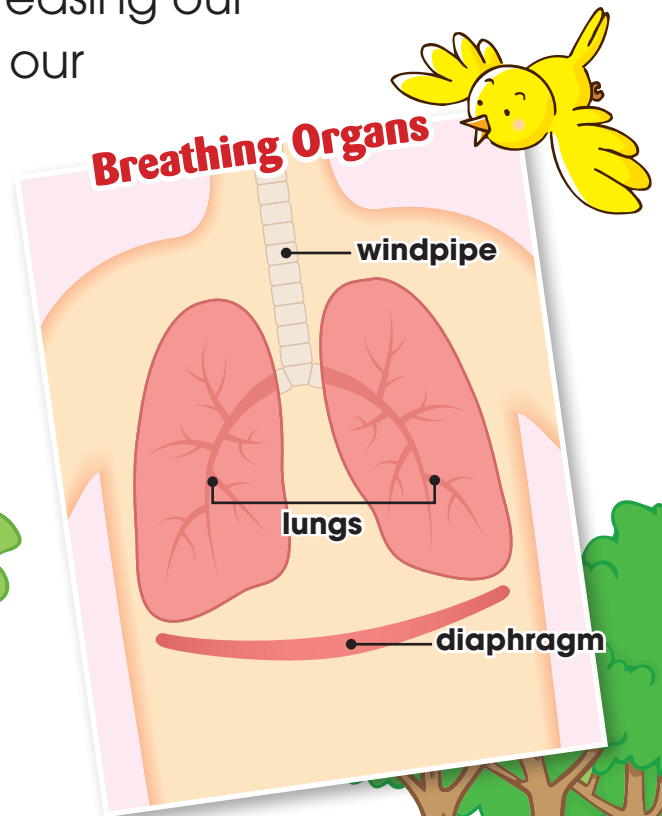
EXPLORATION 1

How do our lungs work?

Explore how we breathe.

We need air to survive. Taking a deep breath of fresh air not only helps us stay alive but also benefits us in many ways, such as sharpening our mind, improving our blood pressure, and increasing our energy level. But how does our body work to enable us to breathe?

Put your hand on your chest and take a deep breath. Can you feel something moving inside?



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How do our lungs work?

Try this experiment to see how human lungs work and how they help us breathe.

Steps:

1

Ask an adult to make a hole in the cap using the nail and hammer so the straw can fit there snugly.

Materials:

- 2 bendy straws
- a plastic bottle
- a glue gun
- a hammer
- 3 balloons
- tape
- a nail
- scissors

2

Make a small hole at the bendy part of the straw. Insert a short straw to make a “Y” shape.

3

Wrap the balloons tightly to the straws and glue them in place as shown.

4

Cut off the bottom of the plastic bottle.

5

Tie a knot at the third balloon's opening. Cut off the balloon. Then stretch the balloon over the bottle with the knot at the bottom and secure it with tape.



Push and pull the knot of the balloon. What do you see?

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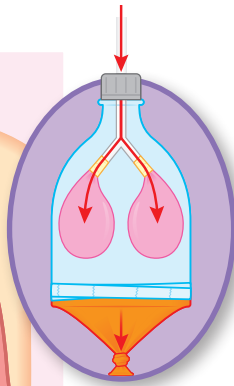
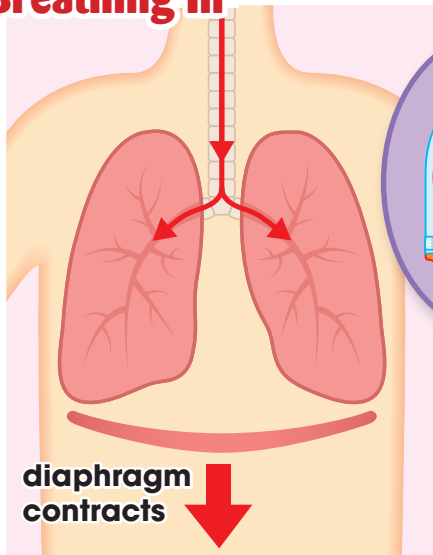
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How do our lungs work?

What you have just created is a model of the organs responsible for helping you breathe. This includes:

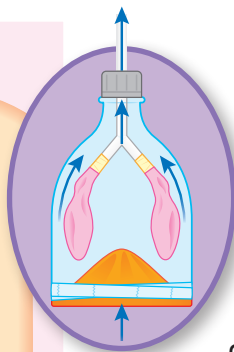
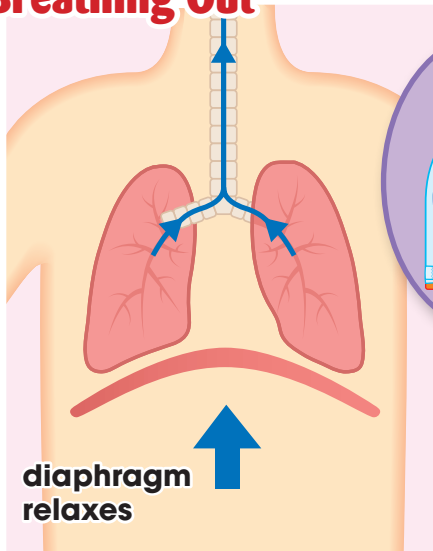
- windpipe (the vertical straw)
- lungs (the two balloons attached to the straws)
- diaphragm (the balloon at the bottom of the bottle)

Breathing In



When you pulled the balloon at the bottom down, the space inside the bottle got bigger; therefore, air was pulled in through the vertical straw and the balloons were inflated. This is how your lungs work when you breathe in – the diaphragm goes down and air is pulled into your lungs.

Breathing Out



The opposite happened when you pushed the balloon at the bottom inward. The space inside the balloon got smaller; therefore, air was pushed out from the balloons. This is what happens when you breathe out – the diaphragm goes up and air is pushed out from your lungs.