

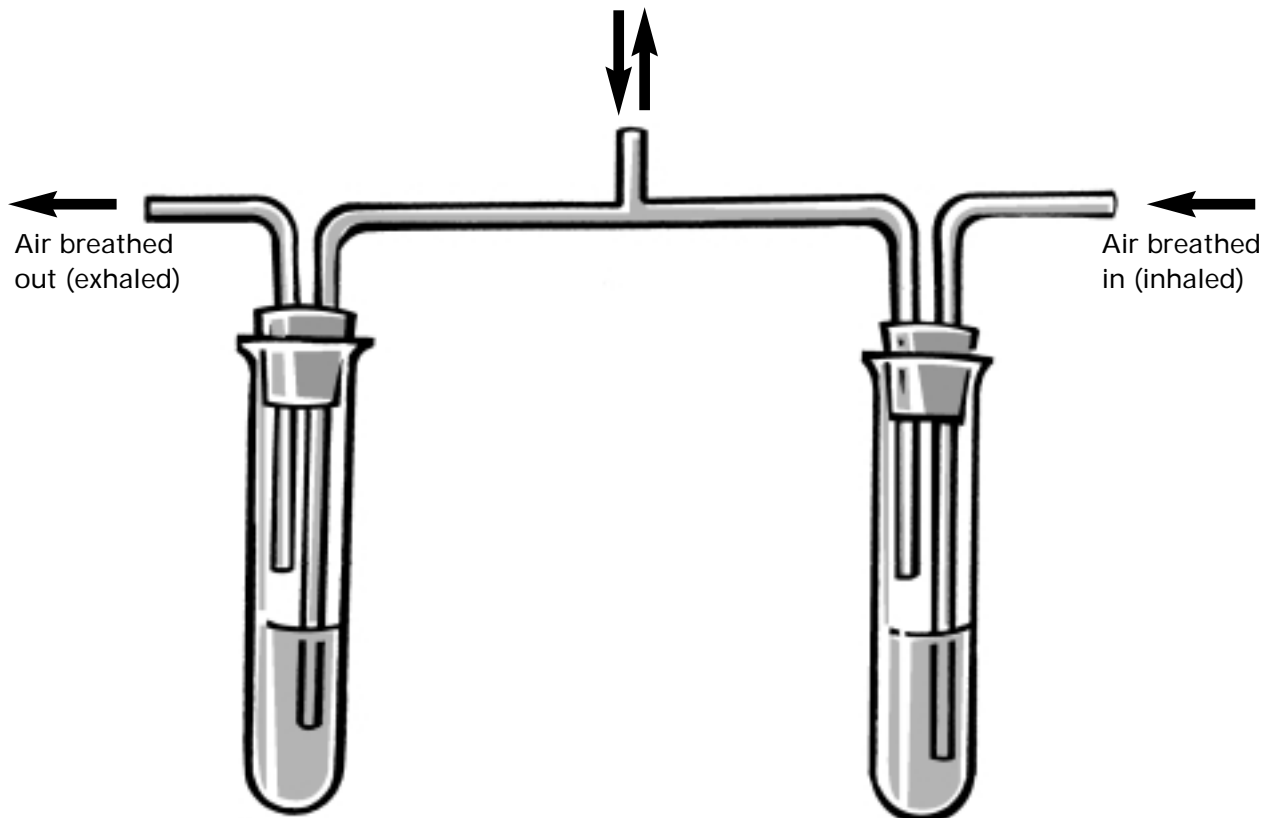
Life

Breathing to live

Aim: To see if we really do breathe out more carbon dioxide than we breathe in.

Introduction: Most people realise that our bodies need oxygen, and that we breathe to get oxygen. But breathing has another important job - excretion! Remember that excretion just means getting rid of waste. Respiration, happening in the cells of your body right now, uses oxygen and makes carbon dioxide and water. Your lungs have the job of getting rid of these substances when you breathe out. You can prove how moist your breath is by breathing on a mirror and seeing the wet condensation. This experiment will show you that you are also breathing out carbon dioxide.

Carbon dioxide is an invisible gas. This experiment uses limewater, which goes from clear to cloudy when carbon dioxide bubbles through it.



Life *Continued...*

What to do:

- First pour some clear limewater into two clean boiling tubes.
- Carefully lower the breathing tubes into the test tubes and gently push the bungs in so that they make a good seal.
- Your apparatus should look like the diagram above, with just one glass tube going down into the limewater in each boiling tube.
- Hold one boiling tube in each hand, or put them in a rack.
- **Gently** blow into the apparatus, then **gently** suck. Notice how the air bubbles through the limewater in one tube when you blow, and the other one when you suck.
- Carry on blowing and sucking, until the limewater in one of the boiling tubes turns cloudy. Can you predict which one it will be?

What's going on:

The air that you breathe out contains waste carbon dioxide that has come from all the cells in your body, carried to your lungs by your blood. The carbon dioxide turns the limewater cloudy. This proves that you are breathing out carbon dioxide.

Extra:

Carry on breathing through the apparatus for a while longer. After a time, the limewater in the other boiling tube goes cloudy as well. Can you work out why?

Additional activity: Mrs Gren's body search

Find the names of the seven basic life processes **and** ten organs in this wordsearch. Hint: all the words are diagonal!

g	h	c	s	s	n	k	s	i	n	n	n
r	j	e	g	i	i	e	y	n	o	o	s
b	y	n	a	d	i	h	o	i	i	e	s
e	u	r	n	r	c	i	t	t	n	e	n
l	b	e	a	a	t	a	c	s	n	o	t
t	y	v	m	i	r	u	i	i	i	n	g
s	o	o	r	i	d	t	t	t	e	r	t
q	t	t	p	o	i	s	e	m	o	e	l
s	u	s	r	v	e	r	e	w	s	i	y
n	e	p	i	t	c	v	t	t	v	v	c
r	e	t	n	x	o	h	e	e	v	w	v
r	y	i	e	m	h	s	r	k	y	x	x