

[Home](#)[News](#)[Sport](#)[Weather](#)[Home](#) | [Learn](#) | [Study support](#) | [Careers](#) | [My Bitesize](#)[More](#)

GCSE Edexcel

# Respiratory system - Edexcel

## Respiratory system structure and function

The respiratory system transports oxygen from the air we breathe, through a system of tubes, into our lungs and then diffuses it into the bloodstream, whilst carbon dioxide makes the opposite journey.

Part of **Physical Education** **Applied anatomy and physiology**

[Save to My Bitesize](#)

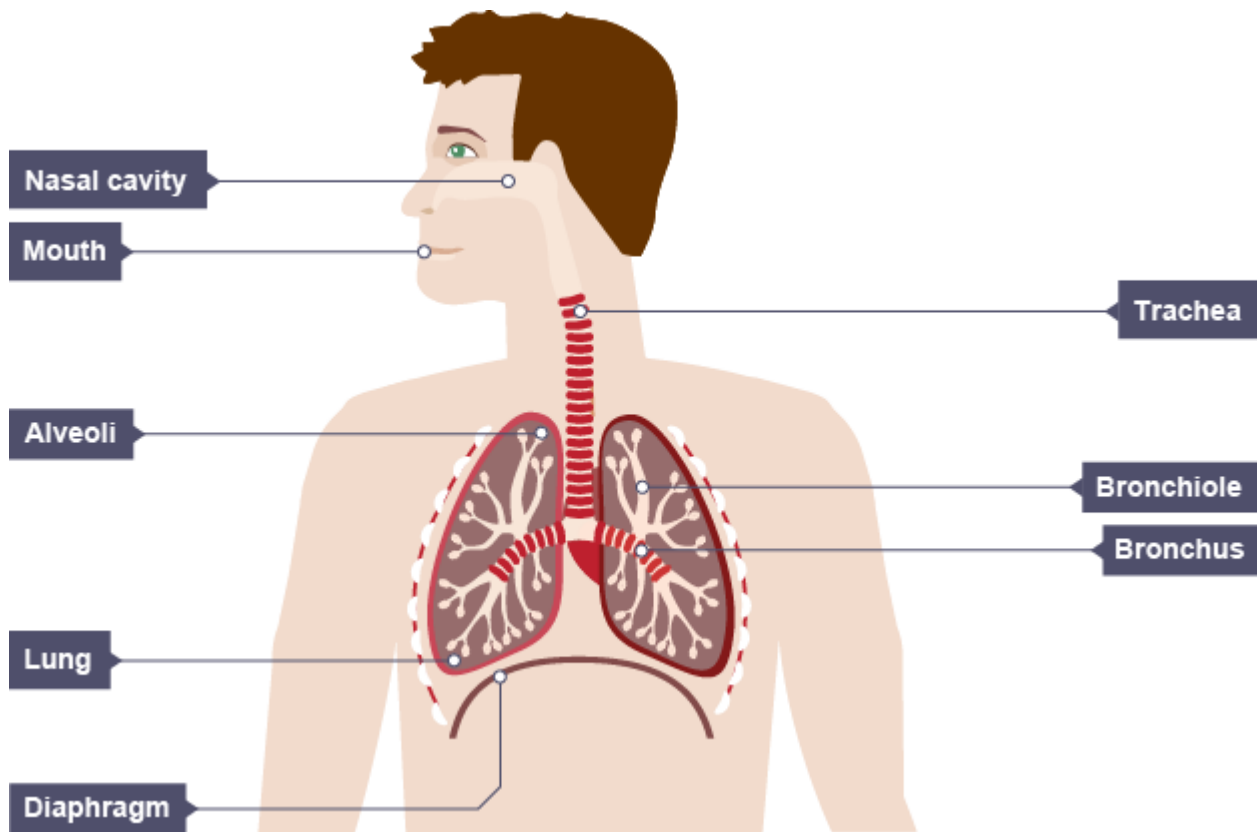
## Pages

[Respiratory system structure and function](#)

[Lung volumes](#)

[Cardio-respiratory system](#)

## Respiratory system structure and function

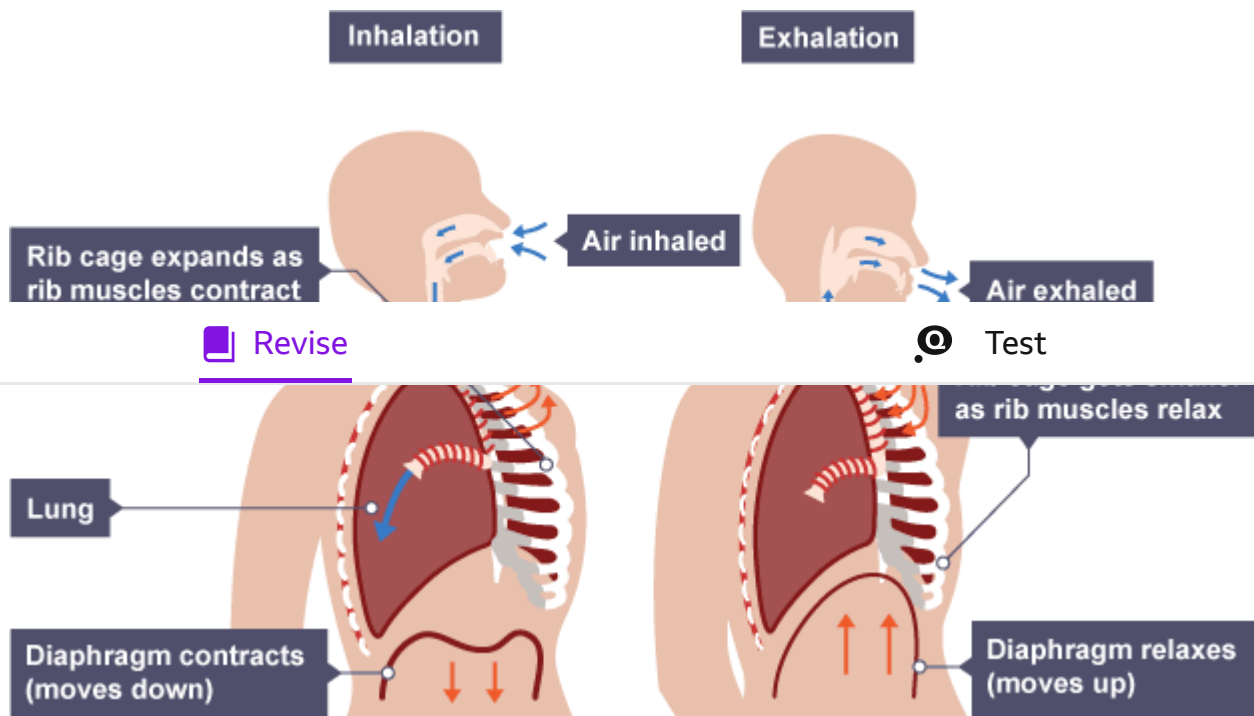


## Passage of air into the lungs

1. Air enters the body and is warmed as it travels through the mouth and nose.
2. It then enters the trachea.
3. The trachea divides into two bronchi. One bronchus enters each lung.
4. Each bronchus branches out into smaller tubes called bronchioles. Air travels through these bronchioles.
5. At the end of the bronchioles, the air enters one of the many millions of alveoli where gaseous exchange takes place.

## Breathing

Breathing is the term given to the process of taking air into and out of the lungs.



The process of inhalation and exhalation

Two important structures for breathing are the **diaphragm** and **intercostal muscles**.

The diaphragm is a sheet of muscle that separates the chest (or thoracic) cavity from the rest of the body.

The intercostal muscles are found between the ribs and they control rib movement.

### Inspiration (breathing in)

The diaphragm contracts and moves downwards. The intercostal muscles contract and move the ribs upwards and outwards. This increases the size of the chest and decreases the air pressure inside it which sucks air into the lungs.

### Expiration (breathing out)

The diaphragm relaxes and moves back to its domed shape. The intercostal muscles relax so the ribs move inwards and downwards under their own weight. This decreases the size of the chest and increases the air pressure in the chest so air is forced out of the lungs.

## Composition of the air we breathe

Breathed in	Breathed out
21% oxygen	16% oxygen

Breathed in	Breathed out
0.03% carbon dioxide	4% carbon dioxide

The human body is designed to take in oxygen and to remove carbon dioxide. The respiratory system, in combination with the cardiovascular system, is responsible for providing this function.

## Gas exchange

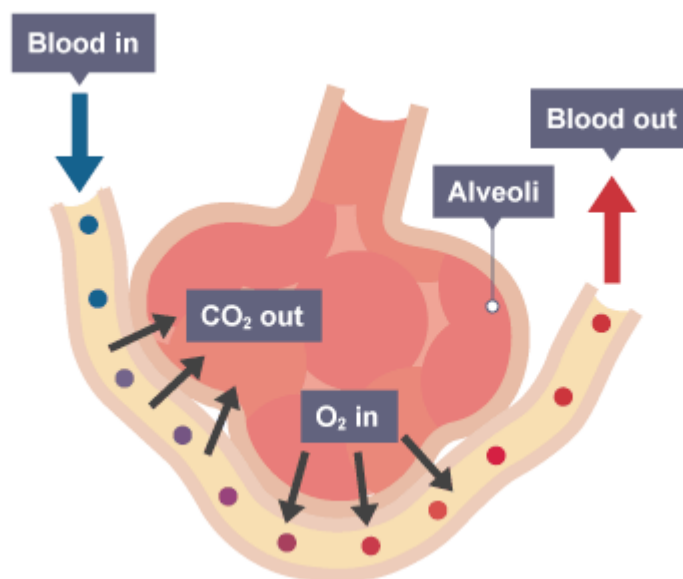
Gas exchange occurs at the alveoli in the lungs and takes place by diffusion. The alveoli are surrounded by capillaries so oxygen and carbon dioxide diffuse between the air in the alveoli and the blood in the capillaries.

Diffusion **i** is the movement of gas from an area of high concentration to an area of low concentration.

There is a high concentration of oxygen in the alveoli and a low concentration of oxygen in the blood, so oxygen diffuses from the alveoli into the blood.

There is a high concentration of carbon dioxide in the blood and a low concentration in the alveoli, so carbon dioxide diffuses from the blood into the alveoli.

Both oxygen and carbon dioxide are capable of combining with an iron-rich protein in the blood called haemoglobin. Haemoglobin carries oxygen to be exchanged at the working muscle and carbon dioxide to be exchanged at the lung.



As the blood moves through the capillaries in the alveoli, oxygen diffuses into it and carbon dioxide diffuses out of it

Capillaries surround the alveoli in the lungs. Both the capillaries and alveoli walls are very thin - just one cell thick. They are made of semi-permeable membranes which allow oxygen and carbon dioxide to pass through them.

## Question

Describe the process of gas exchange at the muscles.

Show answer

Next page >

**Lung volumes**

## More guides on this topic

[Muscular system - Edexcel](#)

[Skeletal system - Edexcel](#)

[Cardiovascular system - Edexcel](#)

[Aerobic and anaerobic exercise - Edexcel](#)

[Long and short term effects of exercise - Edexcel](#)

[Movement analysis in sport - Edexcel](#)

Language:

English



**Related links**

**Best of CBBC**



Go on a Pokémon adventure!

BBC iPlayer



A magical summertime quest...

BBC iPlayer



The adventures of an average family

BBC iPlayer



Can you train with the Karate Cats?

BBC Bitesize

[Home](#)

[Weather](#)

[CBBC](#)

[Bitesize](#)

[Local](#)

[News](#)

[iPlayer](#)

[CBeebies](#)

[Arts](#)

[Three](#)

[Sport](#)

[Sounds](#)

[Food](#)

[Taster](#)

[Terms of Use](#)

[About the BBC](#)

[Privacy Policy](#)

[Cookies](#)

[Accessibility Help](#)

[Parental Guidance](#)

[Contact the BBC](#)

[Make an editorial complaint](#)

[Get Personalised Newsletters](#)

[Why you can trust the BBC](#)

© 2024 BBC. The BBC is not responsible for the content of external sites. [Read about our approach to external linking.](#)