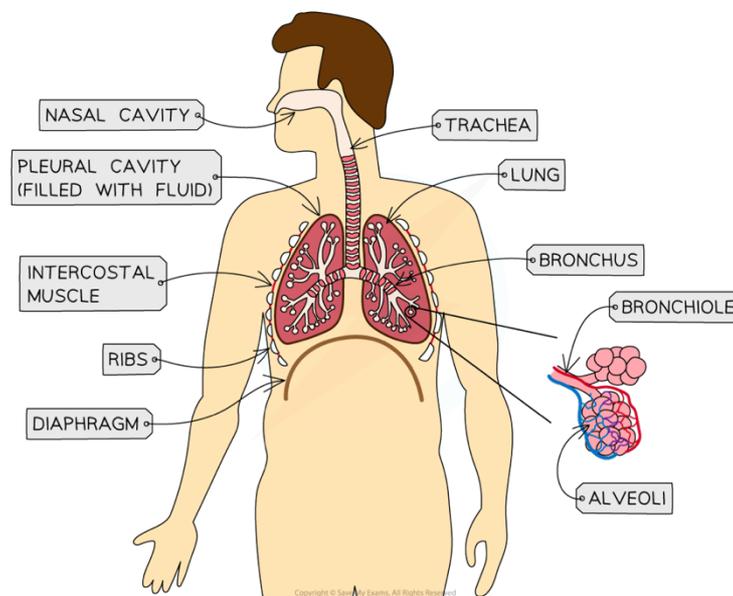


The Lungs

A pair of lungs which has the vital role in breathing. There are some important parts of lungs that help to convert deoxygenated blood (having CO₂ in blood) into oxygenated blood (without CO₂ blood)

Structure of the lungs:

- Lungs take up a large amount of space in the body. The lungs are in the human thorax and are surrounded by pleural membranes.
- It is separated from the lower parts of the body by the diaphragm.
- Here is the route of air through the lungs
 1. **Mouth and Nose.** Air enters the lungs through the mouth and nose
 2. **Trachea.** Air passes into the trachea, which is a big central tube.
 3. **Bronchi.** The trachea splits into two tubes called bronchi, which go to the left and right lungs.
 4. **Bronchioles.** Each bronchus splits into lots of smaller tubes called bronchioles, which move through the lungs.
 5. **Alveoli.** Each bronchiole ends in lots of small air sacs called alveoli. The alveoli come into close contact with the pulmonary capillaries, so the alveoli are specialised for gas exchange.



Function of lungs:

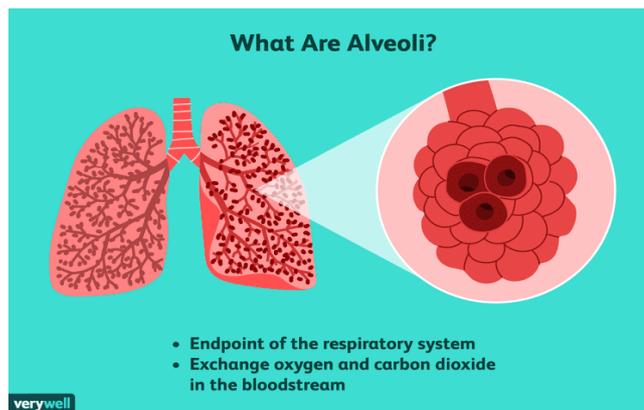
The lungs has two key jobs:

1. **Ventilation** – air needs to be moved in and out of the lungs. Oxygenated is moved in, and then gas exchange happens, and then the now deoxygenated air is moved out.
2. **Gas Exchange** – there is gas exchange between the oxygenated air in the alveoli, and the blood in the pulmonary capillaries. There is movement of oxygen from the air into the blood and move carbon dioxide away the blood into the air.

Alveoli - gas Exchange in the body

► Structure of Alveoli:

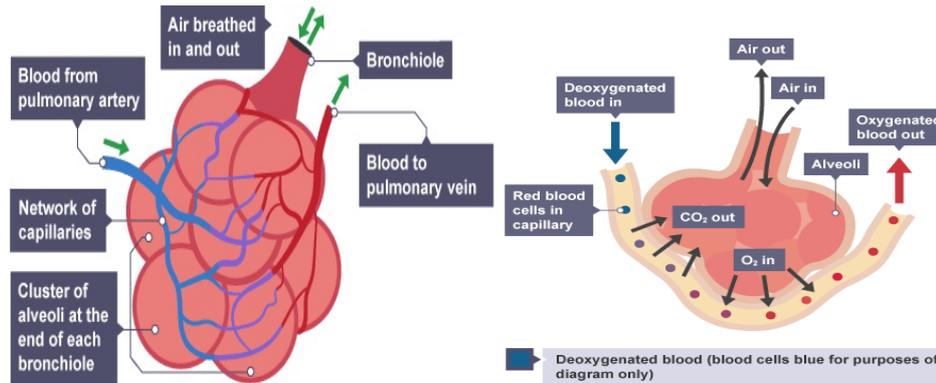
Alveoli are the smallest structures in the respiratory system. They are arranged in clusters throughout the lungs at the ends of the passageways that bring air into the lungs (respiratory tree).



► Function of Alveoli:

1- The walls of the alveoli are very thin, which makes it easier for oxygen and CO₂ to pass between the alveoli and very small blood vessels (capillaries).

2- Oxygen can pass from the alveoli to the capillaries because the concentration of oxygen is lower in the capillaries than it is in the alveoli. Similarly, CO₂ moves the other way because the concentration of carbon dioxide is lower in the alveoli than it is in the capillaries.



How to calculate the breathing rate in breaths per minutes

- using this Formula

$$\text{Breaths per min} = \text{no\# of breaths} / \text{no\# of minutes}$$

- Example:

Q: Bob takes 91 breaths in 7 minutes

Solution:

$$\begin{aligned} \text{Breaths per min} &= \text{no\# of breaths} / \text{no\# of min} \\ &= 91/7 \\ &= \mathbf{13 \text{ breaths per minutes}} \end{aligned}$$