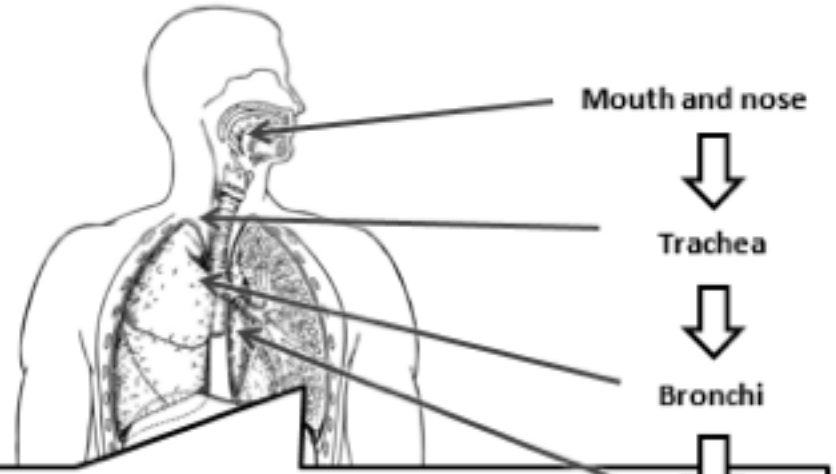
Paper 1: Respiratory system

The Pathway of Air



Features that assist gaseous exchange at the alveoli:

- Large surface area
- Moist, thin walls (one cell thick)
- Short distance for diffusion
- Vast number of capillaries
- Large blood supply
- Movement of gas from high concentration to low concentration

Gaseous Exchange

O_2

- Oxygen breathed in moves from an area of high concentration (in the lungs) to an area of low concentration (in the capillaries).
- Oxygen combines with haemoglobin found in red blood cells to form oxyhaemoglobin.
- Haemoglobin also carries carbon dioxide.
- Carbon dioxide is taken to the lungs, passes through alveoli and is passed out.

CO_2

Red Blood Cells

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The Mechanics of Breathing

In order for us to get oxygen into our bodies, we have to breathe. Outlined below are the mechanics of how we breathe:

		Expiration	Inspiration
Intercostal Muscles	External	Relax	Contract
	Internal	Contract	Relax
	Ribs	Lower	Rise
	Diaphragm	Relaxes into dome shape	Contracts and flattens
	Lung Volume	↓	↑
	Air pressure in lungs	↑	↓
	Air pressure is relatively high in...	The lungs	The environment

Expiration: air out

As air pressure in the lungs increases, it forces air out of the lungs.

Inspiration: air in

As air pressure in the lungs decreases, air is sucked into the lungs.

As we exercise, the abdominal muscles support expiration by pulling the ribs down more forcefully so air can be pushed out more quickly.	As we exercise, the pectoral and sternocleidomastoid muscles support inspiration by allowing the lungs to expand and take in more oxygen.