

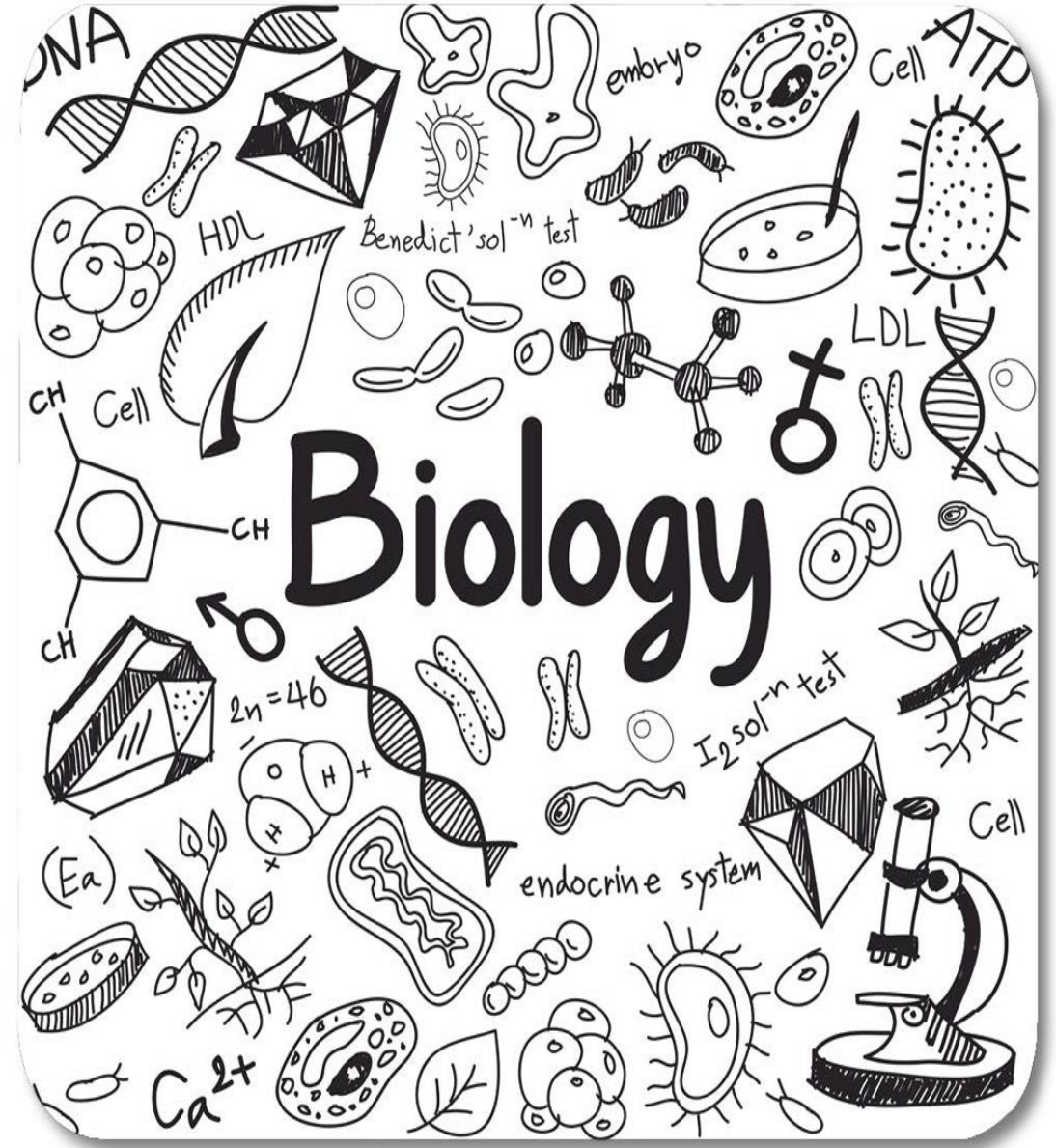


The National  
Orthodox School  
Shmaisani

Lesson: **Respiratory system**

Scholastic Year: 2022-2023

Grade: 7CS



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Cambridge Assessment  
International Education  
Cambridge International School

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Objective : Recognize the main parts of the respiratory system .  
Describe what these organ system do .

Resources:

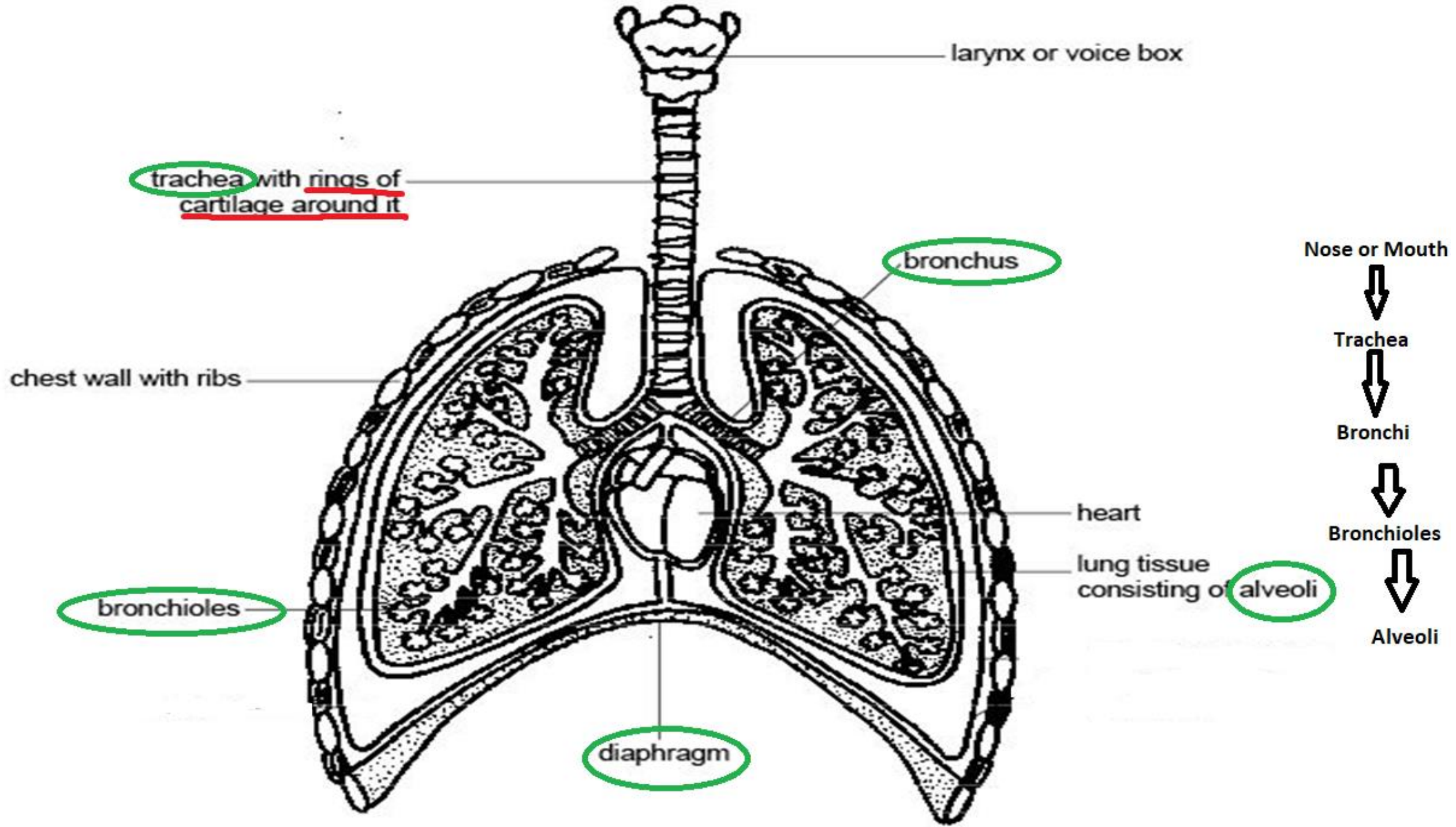
Book pages 124, 125

<https://www.youtube.com/watch?v=UwCxckHdrUE> video

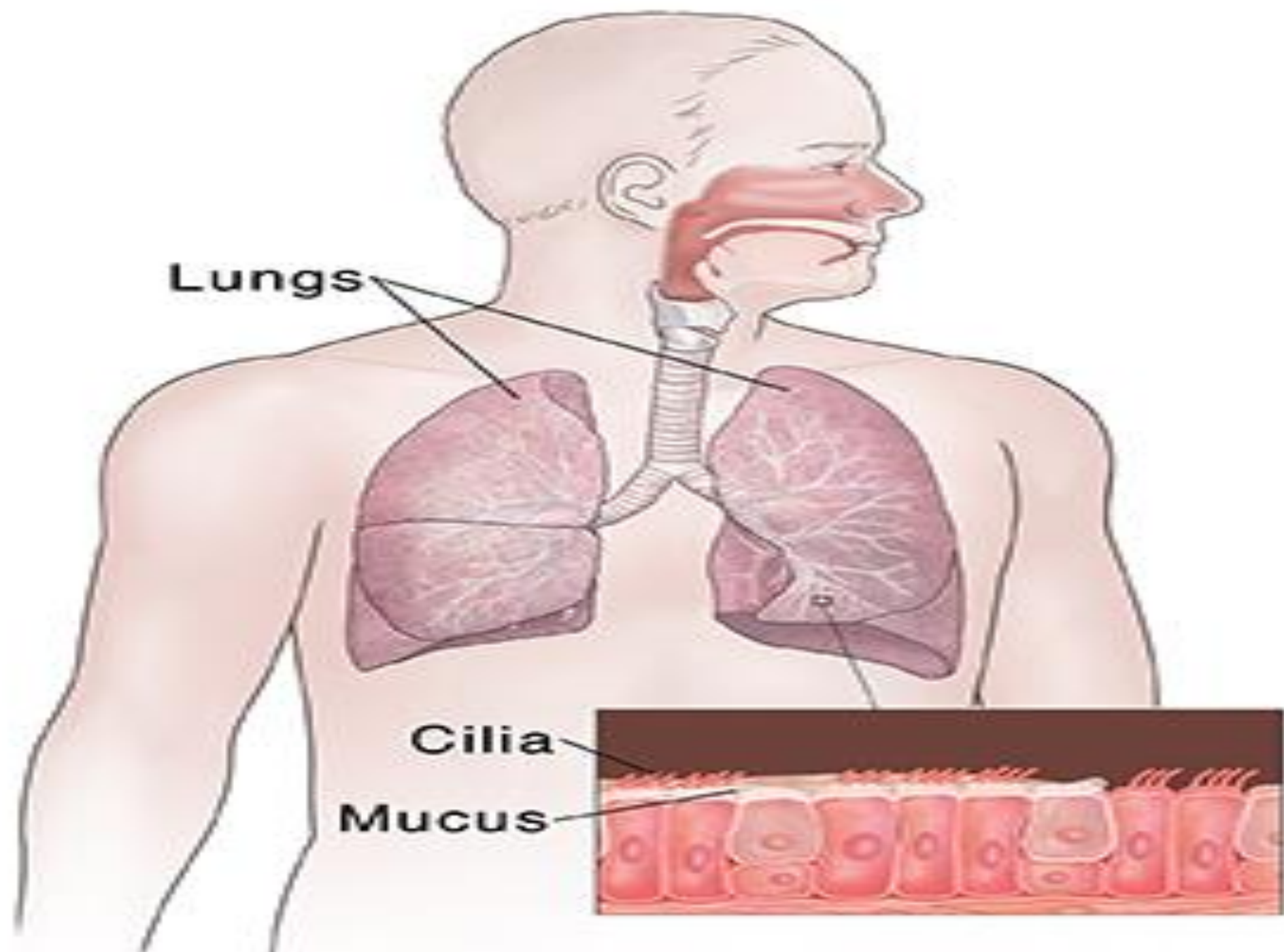
[https://www.liveworksheets.com/worksheets/en/Natural\\_Science/Respiratory\\_system/Respiratory\\_system\\_ne636864he2](https://www.liveworksheets.com/worksheets/en/Natural_Science/Respiratory_system/Respiratory_system_ne636864he2)

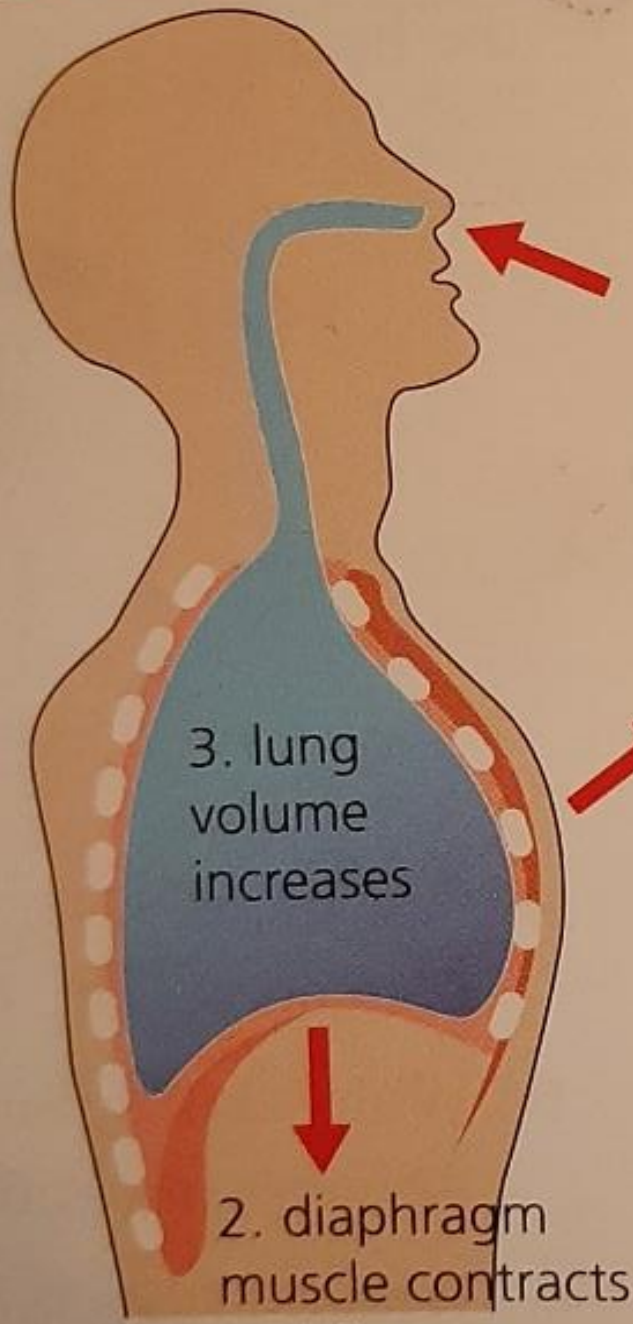
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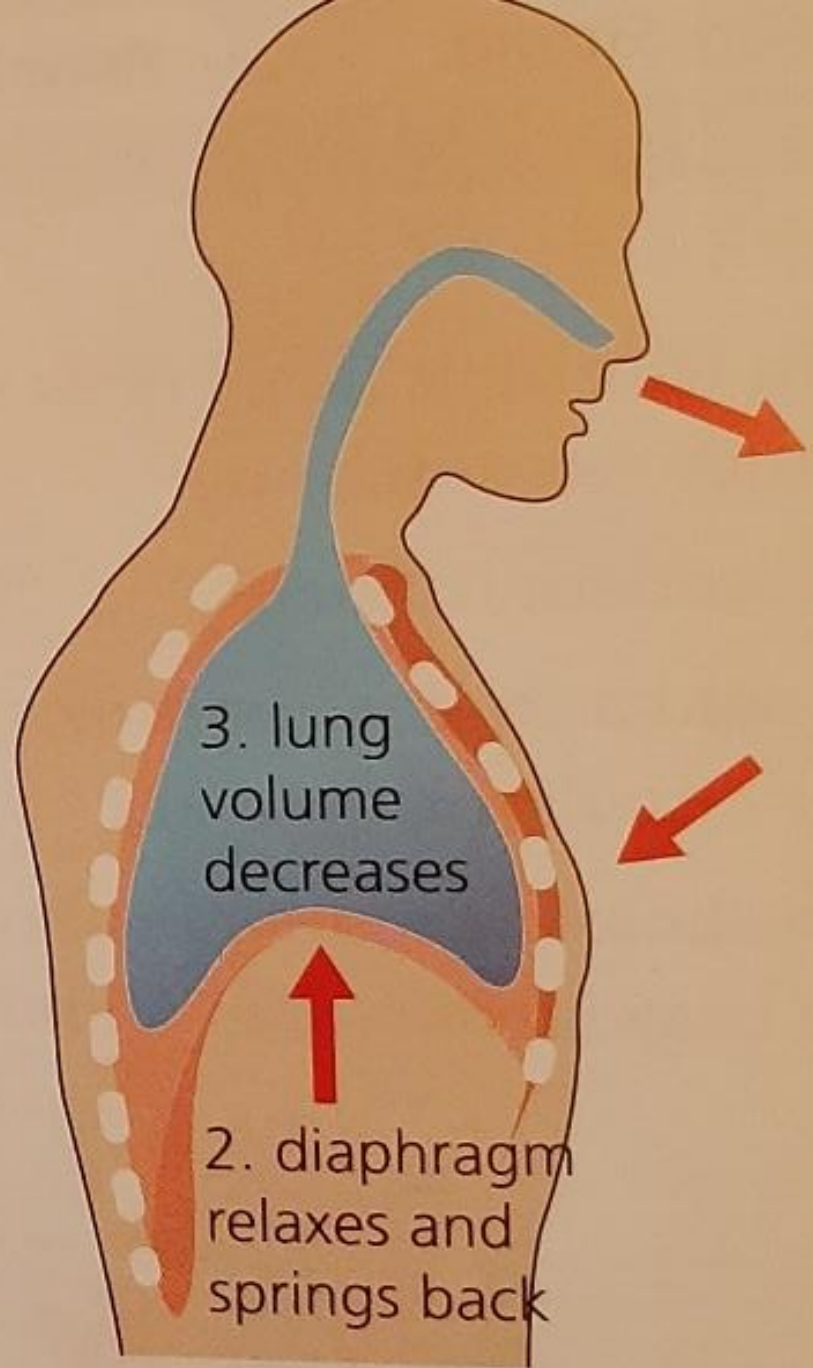


4. air rushes in

1. muscles contract to pull ribs up and out

3. lung volume increases

2. diaphragm muscle contracts and flattens



4. air rushes out

1. muscles relax and drop ribs down

3. lung volume decreases

2. diaphragm relaxes and springs back



# 10.1

## Lungs

### Breathing

Your lungs are soft and spongy. They expand as you breathe in and contract as you breathe out. But what makes air move in and out like this?

Two different muscles control your lungs: bands of muscle between your ribs called **intercostal** muscles and a muscle called your **diaphragm**. Your diaphragm is a thick sheet of muscle. It separates your heart and lungs from the rest of your organs.

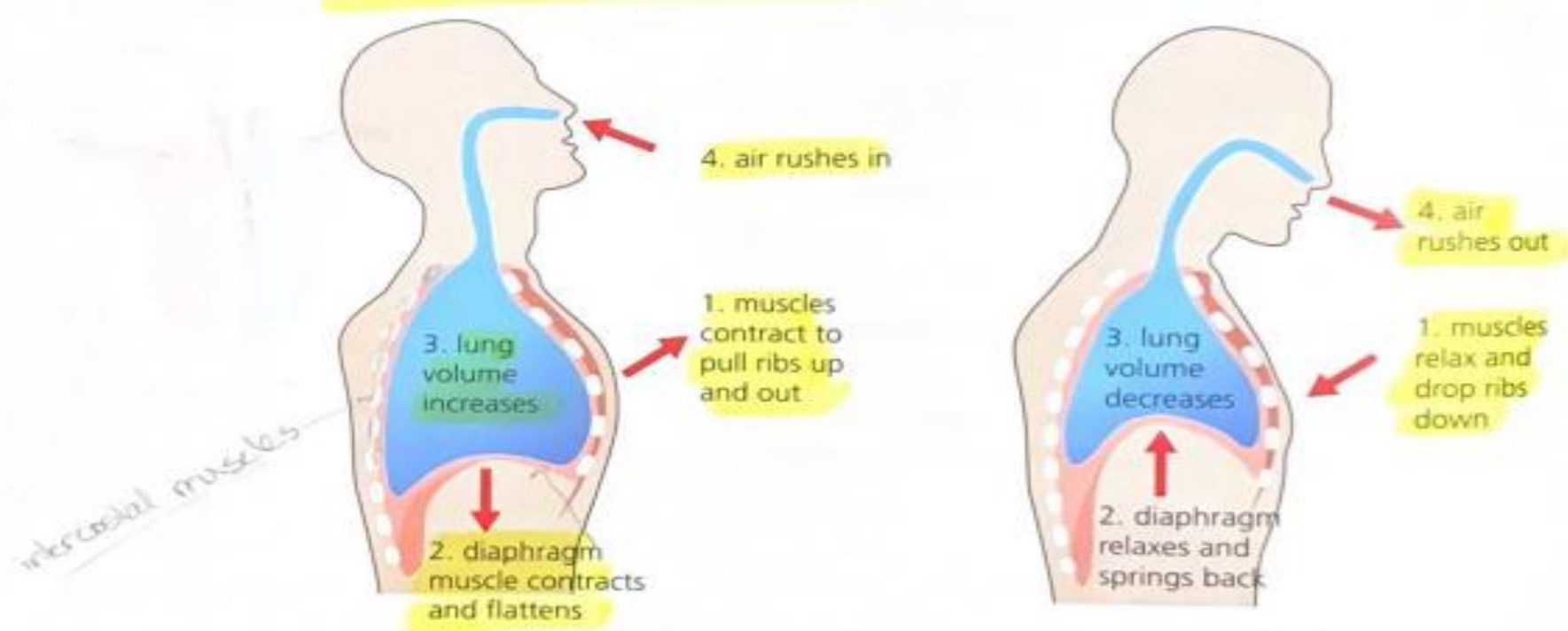
When these muscles contract, your chest gets bigger. Your ribs move up and out and your diaphragm flattens. That makes air rush in through your mouth and nose. When the muscles relax, your chest gets smaller and air flows out again.

#### Objectives

- Recognise the main parts of the respiratory system
- Describe what these organ systems do



↑ Ribs protect your soft, spongy lungs.



↑ Inside your lungs your airways (white) and blood vessels (red) spread out like the branches of a tree.

### Inside your lungs

A strong tube called the **trachea** carries air down from your nose and mouth. Then it divides into two **bronchi** to take air to each lung. On the model in the photograph, the clear tube in the middle is the end of the trachea.

Each **bronchus** keeps dividing like the branches of a tree. It forms smaller and smaller tubes. Each tiny tube is a **bronchiole**. The model only shows the largest ones. There are millions of them. At the end of each bronchiole is a cluster of tiny air spaces called **alveoli**. They are too small to show on the model. *Study the functions from the power P*

Threaded between the bronchioles is another set of branching tubes, shown red on the model. These are arteries, carrying blood to the alveoli.



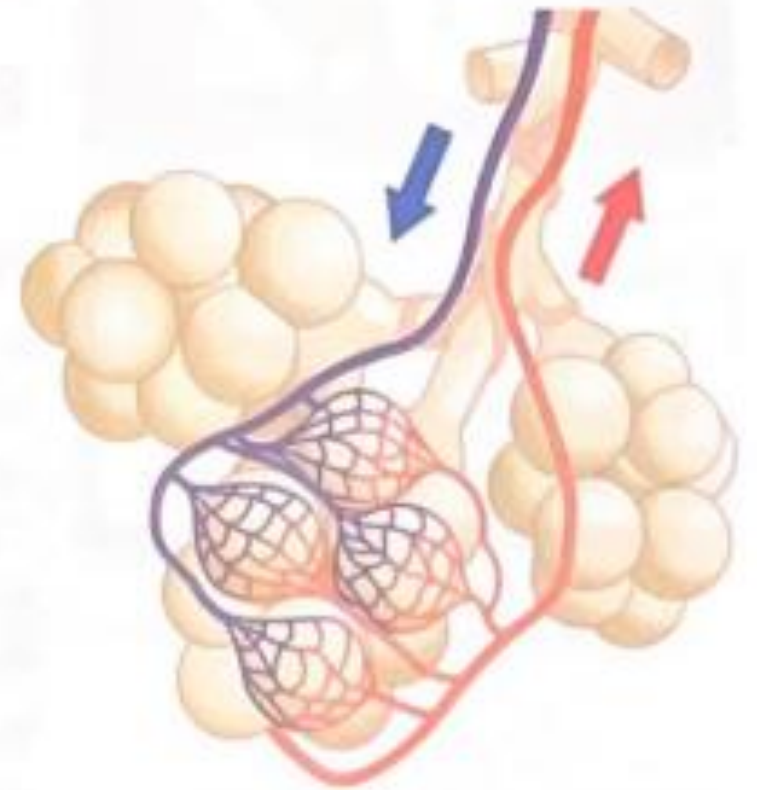
## Alveoli

Each alveolus is surrounded by a network of capillaries. The blood arriving at the capillaries in the lungs is short of oxygen. It is coloured blue in the diagram to show this lack of oxygen. In reality, it is just a slightly darker red than blood that is rich in oxygen.

The walls of the capillaries and alveoli are very thin. Oxygen moves from the air inside the alveoli into the blood in your capillaries. It moves easily by diffusion. At the same time, carbon dioxide moves in the opposite direction – from your blood plasma to the air. This swapping of oxygen and carbon dioxide is **gas exchange**.

Blood spends less than a second in the capillaries around your alveoli. As your red cells race through, they pick up as much oxygen as they can carry. They are normally full of oxygen when they leave the lungs to return to the heart. The oxygen binds to haemoglobin – the red protein inside red blood cells.

Respiration and breathing





## Questions 1,2 ,4

- 1 Name the two different sets of muscles that make you breathe. *Intr*
- 2 Explain how they work together to make air enter your lungs. *Contr*
- 3 Most organs sink in water, but lungs float. Suggest why. *(float)*
- 4 Imagine you are an oxygen molecule that has just been breathed in. Describe the route you take to get into the blood.
- 5 Blood that is short of oxygen is often coloured blue on diagrams. Which blood vessels should be coloured blue, those that carry blood to the lungs or those that carry it back to the heart?

1. Diaphragm and the intercostal muscles .
2. Intercostal muscles contract to pull ribs up and the diaphragm contracts and flattens to give space for the lungs to expand .
4. Nose or mouth / trachea / bronchi / bronchioles / alveoli / blood .