

Breathing Mechanism

KS3 Biology · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

What happens to the diaphragm when you breathe in?

Step 1 · At rest

The diaphragm is a dome-shaped sheet of muscle under the lungs.

Step 2 · Breathing in

It contracts and flattens, moving down, which makes the chest cavity bigger.

Answer: It contracts and flattens (moves down)

Check: When it relaxes it springs back up into a dome.

2. Now try one with the steps

Explain why air moves into the lungs when the chest gets bigger.

Step 1 · Volume up

Step 2 · Pressure down

Step 3 · Air moves

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. Name the sheet of muscle below the lungs. [1]

2. Name the muscles between the ribs. [1]

3. When you breathe in, do your ribs move up and out, or down and in? [1]

4. What happens to the volume of the chest when you breathe in? [1]

5. What happens to the pressure inside the chest when you breathe in? [1]
-
-
6. Air moves from an area of _____ pressure to an area of _____ pressure. [1]
-
-
7. What does the diaphragm do when you breathe out? [1]
-
-
8. In the bell jar model, what do the balloons represent? [1]
-
-
9. Give ONE way the bell jar model is NOT like a real chest. [1]
-
-
10. Explain, using the words volume and pressure, how breathing out happens. [3]
-
-
-
11. A boy takes 12 breaths per minute of 0.5 L each. What volume does he breathe per minute, in litres? [1]
-
-
12. The most air a person can breathe out after the deepest breath in is called vital capacity. Ravi's is 4.2 L and Sophie's is 3.6 L. How much bigger is Ravi's, in litres? [1]
-
-
13. Suggest why a person with a broken rib finds it painful and difficult to breathe deeply. [2]
-
-
14. Plan how you could measure your vital capacity using a large plastic bottle, a tube and a bowl of water. [3]
-
-
-
-

4. Before you hand it in

"The lungs suck air in."

Muscles (diaphragm and intercostals) increase the chest volume; lower pressure inside lets air flow in.

"Bigger volume means bigger pressure."

Volume up → pressure down (air in). Volume down → pressure up (air out).

"When you breathe in, the diaphragm moves up."

Breathing in: the diaphragm contracts and moves DOWN (flattens).