Gas Exchange System

KS3 Biology · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

Put in order the parts air passes through to reach the blood: alveoli, trachea, bronchioles, bronchus.

Step 1 · Largest tube first

Trachea → bronchus.

Step 2 · Smaller branches

Bronchioles.

Step 3 · Final destination

Alveoli, where gas exchange happens.

Answer: Trachea → bronchus → bronchioles → alveoli

Check: The tubes get narrower and more numerous, like the branches of a tree turned upside down.

2. Now try one with the steps

Explain why the trachea has rings of cartilage.

Step 1 · What could go wrong?

Step 2 · What cartilage does

Answer:

3. Practice

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

1. What is the scientific name for the windpipe? [1]

2. What are the tiny air sacs in the lungs called? [1]

3. Which gas passes from the alveoli into the blood? [1]

4. Which gas passes from the blood into the alveoli? [1]

5. By what process do gases move between the alveoli and the blood? [1]

6. What is the job of the cilia in the trachea? [1]

7. What is the job of mucus in the airways? [1]

8. Give TWO adaptations of the alveoli for gas exchange. [2]

9. Inhaled air contains about 0.04% carbon dioxide. Exhaled air contains about 4%. How many times more is that? [1]

10. Why is exhaled air warmer and wetter than inhaled air? [2]

11. Explain why a large surface area in the lungs is important. [2]

12. Air is 21% oxygen. How much oxygen is in 500 cm^3 of air, in cm^3? [1]

13. Suggest why people with a disease that destroys alveolus walls (emphysema) feel breathless. [2]

14. Explain why the walls of capillaries around the alveoli are only one cell thick. [2]

4. Before you hand it in

"We breathe in oxygen and breathe out carbon dioxide."

Exhaled air has LESS oxygen (about 16%) and MORE carbon dioxide (about 4%) than inhaled air.

Calling breathing 'respiration'.

Breathing (ventilation) moves air in and out of the lungs. Respiration is the chemical reaction in cells that releases energy.

"Gas exchange happens in the trachea and bronchi."

Gas exchange only happens in the alveoli, which have thin walls and capillaries.