

Key Stage 3 Precise Learning Points



Unit Number	B3
Unit Title	Respiration, Reproduction & Inheritance
Chapter	Breathing & Respiration

Key Scientific Points

1. Respiration is an exothermic (energy releasing) reaction.
2. Respiration occurs in the mitochondria of all cells. It provides organisms with the energy needed for life processes.
3. Aerobic:
glucose + oxygen → carbon dioxide + water
 $C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$ HA Only
4. Oxygen and glucose diffuse from the bloodstream through capillary walls into cells and through the aqueous cytoplasm to where it is needed in the cell. Carbon dioxide diffuses out in the same way.
5. Oxygen enters and carbon dioxide leaves plants through stomata underneath the leaves.
6. The glucose plants use for respiration is made in leaves through photosynthesis; it is transported through the plant via the phloem in solution to every cell in the plant.
7. Carbon dioxide is an acidic toxin that organisms need to excrete.
8. The purposes of breathing are:
 - To get oxygen into the blood for respiration in cells.
 - To remove carbon dioxide from respiration from the blood
9. The respiratory system is adapted to allow airflow through trachea (windpipe), bronchi, bronchioles, and alveoli.
10. Alveoli have large surface areas to allow maximum gas exchange by diffusion.
11. During inhalation the diaphragm moves up and the rib cage expands, this expands the lungs making air pressure inside them lower than the atmosphere, and so air moves in (and the opposite during exhalation).