



Year 8 Science knowledge organiser

Module – Organisms

Topic – Breathing and Digestion

Length of topic – Approx. 12 lessons

Method of assessment – Summative assessment

Links to prior learning

KS2 Year 4 Animals including humans topic

- Describe the simple functions of the basic parts of the digestive system in humans

KS2 Year 6 Animals including humans topic

- Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function
- Describe the ways in which nutrients and water are transported within animals, including humans.

KS3 Year 7 topic Organisms

- Structure of plant and animal cells including specialised cells

KS3 Year 8 topic Ecosystems

- Respiration is a series of chemical reactions, in cells, that breaks down glucose to provide energy and form new molecules.

Knowledge to be taught.

- In gas exchange, oxygen and carbon dioxide move between alveoli and the blood.
- Oxygen is transported to cells for aerobic respiration and carbon dioxide, a waste product of respiration, is removed from the body.
- Breathing occurs through the action of muscles in the ribcage and diaphragm.
- The amount of oxygen required by body cells determines the rate of breathing.
- The body needs a balanced diet with carbohydrates, lipids, proteins, vitamins, minerals, dietary fibre and water, for its cells' energy, growth and maintenance.
- Organs of the digestive system are adapted to break large food molecules into small ones which can travel in the blood to cells and are used for life processes.

Skills to be covered

- Analysing patterns seen in test results
- Drawing conclusions from test results

Working scientifically strands covered

Analyse patterns	✓
Discuss limitations	✓
Draw conclusions	✓
Present data	✓
Communicate ideas	✓
Construct explanations	✓
Critique claims	✓
Justify opinions	✓
Collect data	
Devise questions	
Plan variables	✓
Test hypothesis	✓
Estimate risks	
Examine consequences	
Review theories	
Interrogate	✓

Assessment

Summative assessment based on knowledge taught through the topic

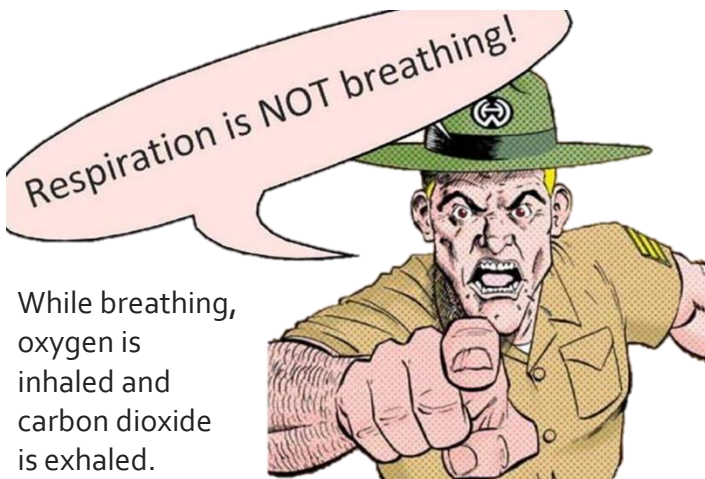


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Facts

Each cell in your body needs oxygen to move, build, reproduce, and turn food into energy.

Breathing involves the process of inhaling and exhaling the air in and out of lungs.

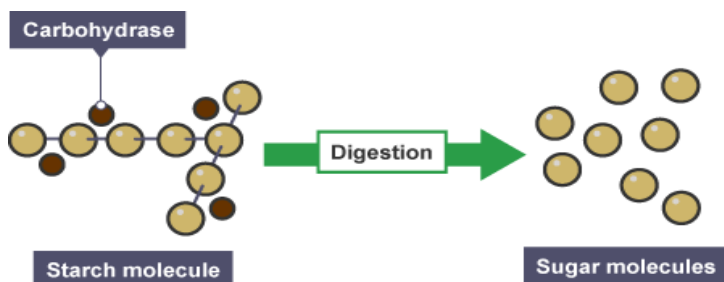


While breathing, oxygen is inhaled and carbon dioxide is exhaled.

The average total lung capacity is about 6 litres (6000 ml).

Respiration is the process of breaking down of glucose to produce energy which is used by cells to carry out the cellular function.

Enzymes are special proteins that can break large molecules into small molecules. Different types of enzymes can break down different nutrients.



Iron is a mineral important for red blood cells.

Calcium is a mineral needed for strong teeth and bones.

Vitamins and minerals are needed in small amounts to keep the body healthy.

Keywords

Alveoli: Small air sacs found at the end of each bronchiole.

Amylase: An enzyme that can break down starch into simple sugars.

Bile: A substance produced in the liver. It emulsifies fats to prepare them for digestion.

Breathing: The movement of air in and out of the lungs.

Bronchi: Two tubes which carry air to the lungs.

Bronchioles: Small tubes in the lung.

Carbohydrase: Enzyme that breaks down carbohydrates.

Carbohydrates: The body's main source of energy. There are two types: simple (sugars) and complex (starch).

Diaphragm: A sheet of muscle found underneath the lungs.

Dietary fibre: Parts of plants that cannot be digested, which helps the body eliminate waste.

Enzymes: Substances that speed up the chemical reactions of digestion.

Gut bacteria: Microorganisms that naturally live in the intestine and help food break down.

Large intestine: Lower part of the intestine from which water is absorbed and where faeces are formed.

Lipase: Enzyme that breaks down lipids (fats and oils).

Lipids (fats and oils): A source of energy. Found in butter, milk, eggs, nuts.

Lung volume: Measure of the amount of air breathed in or out.

Protease: Enzyme that breaks down proteins.

Protein: Nutrient your body uses to build new tissue for growth and repair. Sources are meat, fish, eggs, dairy products, beans, nuts and seeds.

Ribs: Bones which surround the lungs to form the ribcage.

Small intestine: Upper part of the intestine where digestion is completed and nutrients are absorbed by the blood.

Stomach: A sac where food is mixed with acidic juices to start the digestion of protein and kill microorganisms.

Trachea (windpipe): Carries air from the mouth and nose to the lungs.

Villi: Finger-like projections in the small intestine that provide a large surface area for the absorption of food.