

Key points to learn

Producers	Plants and algae are producers; they make their own food by photosynthesis
Photosynthesis	Plants make food through a process of photosynthesis. This is a chemical reaction: Carbon dioxide + water → glucose + oxygen
Chloroplasts	Photosynthesis takes place in chloroplasts. These contain chlorophyll, which traps the light needed for photosynthesis
Stomata	Allow gases to enter and leave a leaf. Guard cells open the stomata during the day and close them at night
Plant minerals	All plants need minerals for healthy growth. For example, nitrates are needed for to make amino acids. Amino acids join together to form proteins which are used for growth
Chemosynthesis	Some species of bacteria use a variety of chemical reactions to make glucose. This process is known as chemosynthesis.

Key points to learn

Aerobic respiration	Glucose + oxygen → carbon dioxide + water (+energy)
Mitochondria	To transfer energy from glucose aerobic respiration takes place inside mitochondria
Fermentation	A type of anaerobic respiration performed by microorganisms. It is used in bread making and beer making Glucose → ethanol + carbon dioxide (+energy)
Food chains	Show the transfer of energy between organisms
Food web	A set of linked food chains
Bioaccumulation	The build-up of toxic chemicals in organisms in a food chain until they reach harmful levels
Interdependence	Is the way in which organisms depend upon each other to survive, grow and reproduce

KS3: B2.2 Ecosystem Processes

Knowledge Organiser

Big Picture



Biology

1.1 Cells

1.2 Structure and function of body systems

1.3 Reproduction

2.1 Health & lifestyle

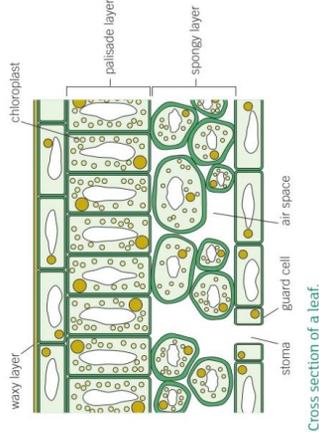
2.2 Ecosystem processes

2.3 Adaptation and inheritance

Fantastic fact!

Leaves come in all shapes and sizes but most are green because they contain lots of chlorophyll.

Additional Information



Cross section of a leaf.

Lesson	Developing	Secure	Extending
B2 2.1 Photosynthesis	I can state where photosynthesis occurs in the plant. <input type="checkbox"/>	I can describe the process of photosynthesis. <input type="checkbox"/>	I can explain the importance of photosynthesis in the food chain. <input type="checkbox"/>
	I can state the products of photosynthesis. <input type="checkbox"/>	I can state the word equation for photosynthesis. <input type="checkbox"/>	I can explain how the plant obtains the reactants for photosynthesis. <input type="checkbox"/>
	I can name the main structures of the leaf. <input type="checkbox"/>	I can describe the structure and function of the main components of the leaf. <input type="checkbox"/>	I can explain how the structures of the leaf make it well adapted for photosynthesis. <input type="checkbox"/>
B2 2.2 Leaves	I can state the function of chloroplasts in a leaf. <input type="checkbox"/>	I can explain the distribution of the chloroplasts in the leaf. <input type="checkbox"/>	I can explain the role of chloroplasts in photosynthesis. <input type="checkbox"/>
	I can name the minerals required by a plant. <input type="checkbox"/>	I can describe how a plant uses minerals for healthy growth. <input type="checkbox"/>	I can explain deficiency symptoms in plants. <input type="checkbox"/>
	I can state that nitrates are essential for plant growth. <input type="checkbox"/>	I can explain the role of nitrates in plant growth. <input type="checkbox"/>	I can explain how proteins are made for plant growth. <input type="checkbox"/>
B2 2.4 Chemosynthesis	I can name an organism which carries out chemosynthesis. <input type="checkbox"/>	I can describe where chemosynthesis takes place. <input type="checkbox"/>	I can explain how some chemosynthetic organisms form symbiotic relationships. <input type="checkbox"/>
	I can state the energy source for chemosynthesis. <input type="checkbox"/>	I can describe the process of chemosynthesis. <input type="checkbox"/>	I can compare similarities and difference between photosynthesis and chemosynthesis. <input type="checkbox"/>
	I can state the requirements for aerobic respiration. <input type="checkbox"/>	I can state the word equation for aerobic respiration. <input type="checkbox"/>	I can explain how the reactants for respiration get into the cells. <input type="checkbox"/>

Lesson	Developing	Secure	Extending
B2 2.5 Aerobic respiration	I can give the name of the process where energy is released in cells. <input type="checkbox"/>	I can describe the process of respiration. <input type="checkbox"/>	I can explain the process of aerobic respiration. <input type="checkbox"/>
B2 2.6 Anaerobic respiration	I can state the products of anaerobic respiration. <input type="checkbox"/>	I can state the word summary for anaerobic respiration. <input type="checkbox"/>	I can explain the uses of the products from anaerobic respiration. <input type="checkbox"/>
	I can state one difference between aerobic and anaerobic respiration. <input type="checkbox"/>	I can describe the differences between aerobic and anaerobic respiration. <input type="checkbox"/>	I can explain the differences between the two types of respiration. <input type="checkbox"/>
B2 2.7 Food chains and webs	I can state the definition of a food chain. <input type="checkbox"/>	I can describe what food chains show. <input type="checkbox"/>	I can explain the link between food chains and energy. <input type="checkbox"/>
	I can state the definition of a food web. <input type="checkbox"/>	I can describe what food webs show. <input type="checkbox"/>	I can explain why a food web gives a more accurate representation of feeding relationships than a food chain. <input type="checkbox"/>
B2 2.8 Disruption to food chains and webs	I can state that one population can affect another. <input type="checkbox"/>	I can describe the interdependence of organisms. <input type="checkbox"/>	I can explain the interdependence of organisms. <input type="checkbox"/>
	I can state that toxic materials can get into the food chain. <input type="checkbox"/>	I can describe how toxic materials can accumulate in a food web. <input type="checkbox"/>	I can explain why toxic materials have greater effect on top predators in a food chain. <input type="checkbox"/>
B2 2.9 Ecosystems	I can state that different organisms can co-exist. <input type="checkbox"/>	I can describe how different organisms co-exist within an ecosystem. <input type="checkbox"/>	I can explain why different organisms are needed in an ecosystem. <input type="checkbox"/>
	I can state the definition of the term niche. <input type="checkbox"/>	I can identify niches within an ecosystem. <input type="checkbox"/>	I can explain why different organisms within the same ecosystem have different niches. <input type="checkbox"/>

Key word	Definition
aerobic respiration	Chemical reaction where glucose reacts with oxygen to release energy, carbon dioxide, and water.
algae	Green unicellular or multicellular organisms that perform photosynthesis and live underwater.
anaerobic respiration	Chemical reaction that takes place without oxygen. Glucose is converted into lactic acid and energy is released.
bioaccumulation	The build up of toxic chemicals inside organisms in a food chain.
chemosynthesis	Reaction performed by bacteria, using energy transferred from chemical reactions to produce glucose.
chlorophyll	Green pigment that absorbs light for use in photosynthesis.
co-exist	Plants and animals living in the same habitat at the same time.
community	The collection of the different types of organism present in an ecosystem.
consumer	Organisms that eat other organisms as food.
deficiency	A lack of minerals, that causes poor growth.
ecosystem	The name given to the interaction between plants, animals, and their habitat in a particular location.
fermentation	Chemical reaction used by microorganisms to convert glucose into ethanol, carbon dioxide, and energy.
fertiliser	Chemical containing minerals, normally applied to soil.
food chain	A diagram that shows the transfer of energy between organisms.
food web	A diagram showing a set of linked food chains.
habitat	The area in which an organism lives.
haemoglobin	The substance in blood that carries oxygen around the body.
interdependence	The way in which living organisms depend on each other to survive, grow, and reproduce.
magnesium	A mineral needed by plants for making chlorophyll.
niche	A particular place or role that an organism has in an ecosystem.
nitrates	Minerals containing nitrogen for healthy growth.

oxygen debt	Extra oxygen required after anaerobic respiration to break down lactic acid.
phosphates	Minerals containing phosphorus for healthy roots.
photosynthesis	The process plants use to make their own food, glucose. In photosynthesis, carbon dioxide and water react together to make glucose and oxygen.
plasma	The liquid part of blood, which carries carbon dioxide to the lungs where it is exhaled.
population	The number of plants or animals of the same type that live in the same area.
potassium	A mineral needed by plants for healthy leaves and flowers.
predator	An animal that eats other animals.
prey	An animal that is eaten by another animal
producer	Organism that makes its own food using photosynthesis.
stomata	Holes found on the bottom of the leaf that allow gases to diffuse in and out of the leaf.