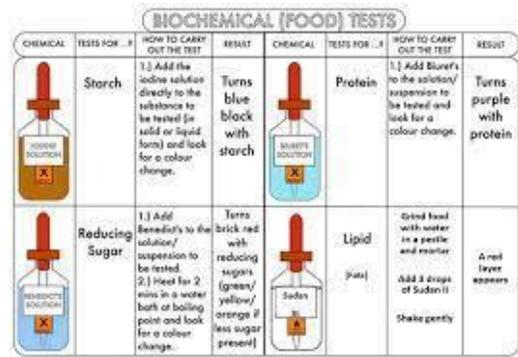


Key Vocabulary	
Keyword	Definition
carbohydrate	A nutrient that is used as the main source of energy.
constipation	When the intestines get blocked.
diet	The food that you eat.
fat	A nutrient that is stored to be used for energy in the future. It also acts as a thermal insulator.
fibre	A substance found in food that is not used up by the body. It helps to keep our intestines clean.
lipid	Fats (and oils) are part of a large group of similar substances called lipids.
mineral	An element that is a nutrient needed in small quantities for health. Minerals are found in foods and soils as compounds called mineral salts.
nutrient	A substance needed in the diet to provide raw materials for making new substances and for energy release.
nutrition	The substances that help organisms respire and grow. All organisms need nutrition.
protein	A nutrient used for growth and repair.
starch	A type of insoluble carbohydrate found in plants.
sugar	A type of soluble carbohydrate. Glucose is an example of a sugar.
vitamin	A nutrient needed in small quantities for health
fuel	A substance that contains a store of chemical or nuclear energy that can easily be transferred.
kilojoule (kJ)	A unit for measuring energy. There are 1000 joules (J) in 1 kilojoule
respiration	A process in which energy is released from substances so it can be used by an organism. All organisms respire.
anaemia	A deficiency disease caused by a lack of iron.
balanced diet	Eating a wide variety of foods to provide all the things the body needs.
deficiency disease	A disease caused by a lack of a nutrient.
heart disease	A disease caused by narrowing of the arteries carrying blood to the muscles of the heart, so the heart muscles do not receive enough oxygen.

Why do we need food?			
Substance Needed	Examples	Why it is needed	Good sources
Carbohydrate	Starch, sugars	For energy (Respiration)	Pasta, bread, rice, potatoes
Protein		For growth and repair (building new substance)	Meat, fish, beans
Vitamins	Vitamin C	For health	Fruits and vegetables (e.g oranges contain lots of Vit C
Minerals	Calcium	For health	Fruits, vegetables, and dairy products (e.g. milk contains calcium)
Fibre		For health (helps to stop constipation)	Wholemeal bread, wholegrain rice, celery and other fibrous vegetables
Water		For health (water dissolves substances and fills up cells)	

We can do tests to find out which substances are in foods. For example, starch makes iodine solution go a blue-black colour.



We also need fibre (made by plant cell walls) to help food move through the intestines and stops them getting blocked (constipation). Water is also very important as it acts like a lubricant, dissolves substances to be carried round the body, fills cells up so that they hold their shape and cools you down when you sweat.

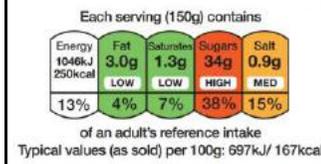
Nutritional information - Fuels

We can do tests to find out which substances are in foods. For example, starch makes iodine solution go a blue-black colour.

Nutrition information labels on foods tell us what the food contains. The labels also tell us how much energy is stored in the substances that make up the food. The amount of energy is measured in **kilojoules (kJ)**.

The amount of energy a person needs in a day depends on:

- levels of activity (more active people need more energy)
- age (teenagers need more energy from food than adults do)
- whether the person is a girl or a boy (boys usually need more energy than girls).



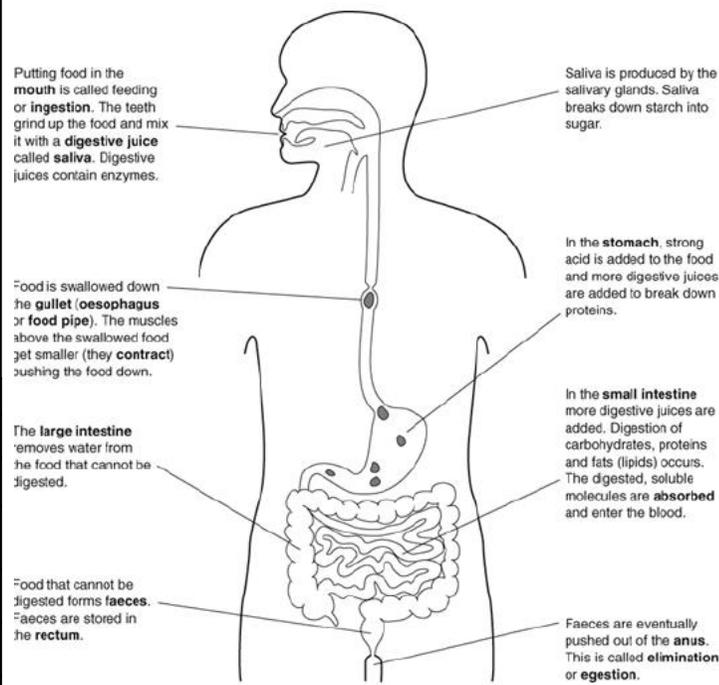
ALLERGY INFORMATION		
CONTAINS Nuts, Sulphites.		
Not suitable for NUT allergy sufferers due to manufacturing methods used.		
NO ARTIFICIAL COLOURS OR ARTIFICIAL FLAVOURINGS		
NUTRITION		
Typical values	per 100g	per serving
Energy kJ	1865	899
Energy kcal	445	240
Protein	9.6g	5.2g
Carbohydrate	53.0g	28.2g
of which sugars	51.0g	27.2g
Fat	16.1g	10.2g
of which saturates	3.2g	1.7g
Fibre	5.0g	2.7g
Sodium	trace	trace
Equivalent as salt	trace	trace

To ensure that the body is getting the all the correct nutrition, a balanced diet must be followed. The 'Eatwell plate' can help with this.



Key vocabulary	
Keyword	Definition
kwashiorkor	A deficiency disease caused by a lack of protein.
malnutrition	A problem caused by having too much or too little of a nutrient in the diet. Obesity, starvation and deficiency diseases are all examples.
obesity	Being very overweight.
Reference Intake (RI)	The amount of a nutrient that people are advised to eat in a day.
rickets	A deficiency disease caused by a lack of calcium, causing weak and poorly shaped bones.
scurvy	A deficiency disease caused by a lack of vitamin C. Joints hurt, the gums bleed and cuts take a long time to heal.
starvation	A form of malnutrition in which people lack many nutrients.
absorb	'To soak up' or 'to take in'.
anus	The opening at the end of the gut.
bacterium	A type of prokaryote microorganism. Plural is bacteria.
catalyst	A substance that speeds up a chemical reaction, without itself being used up.
digestion	A process that breaks food into soluble substances in our bodies.
digestive system	An organ system that breaks down food.
egestion	When faeces are pushed out of the anus.
enzyme	A substance that can speed up some processes in living things (e.g. breaking down food molecules).
faeces	Waste food material produced by the intestines.
gullet	Another term for 'oesophagus'.
ingestion	Taking substances into the body. For example, we ingest food using our mouths.
insoluble	Describes a substance that cannot be dissolved in a certain liquid.
large intestine	An organ in which water is removed from undigested food.
liver	An organ used to make and destroy substances in your body. It also stores some substances.
rectum	An organ that stores faeces before they are egested.
saliva	A digestive juice. It contains an enzyme that breaks down starch into sugar.

How is food digested?



Putting food in the **mouth** is called feeding or **ingestion**. The teeth grind up the food and mix it with a **digestive juice** called **saliva**. Digestive juices contain enzymes.

Saliva is produced by the salivary glands. Saliva breaks down starch into sugar.

In the **stomach**, strong acid is added to the food and more digestive juices are added to break down proteins.

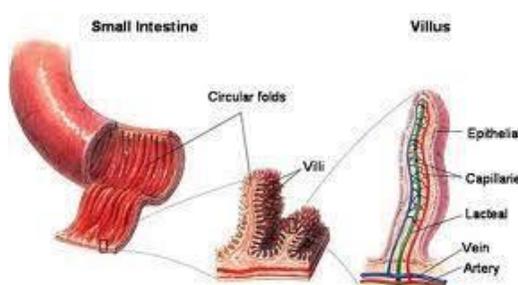
Food is swallowed down the **gullet (oesophagus or food pipe)**. The muscles above the swallowed food get smaller (they **contract**) pushing the food down.

In the **small intestine** more digestive juices are added. Digestion of carbohydrates, proteins and fats (lipids) occurs. The digested, soluble molecules are **absorbed** and enter the blood.

The **large intestine** removes water from the food that cannot be digested.

Food that cannot be digested forms **faeces**. Faeces are stored in the **rectum**.

Faeces are eventually pushed out of the **anus**. This is called **elimination or egestion**.



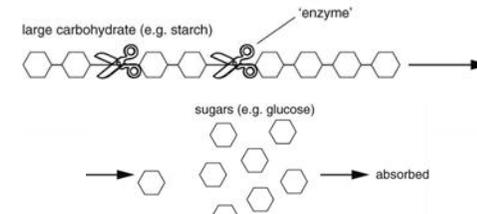
Small Intestine **Villus**

Circular folds Villi Epithelial cells Capillaries Lacteal Vein Artery

To help absorb the digested food, the wall of the small intestine is folded and covered with villi, increasing the surface area. The wall of the small intestine is also only one-cell thick, meaning that it is easy for small molecules to diffuse out of the small intestine and into the blood.

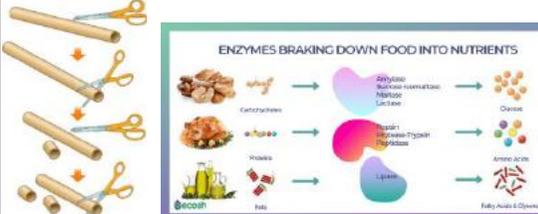
Enzymes

Digestion turns large **insoluble** substances into small **soluble** ones. The organs of the **digestive system** help us digest food. Many of them produce **enzymes** (substances that are **catalysts** and help speed up food digestion).



large carbohydrate (e.g. starch) → enzyme → sugars (e.g. glucose) → absorbed

A helpful model to demonstrate enzyme action is to think of enzymes as a pair of scissors cutting up large chain molecules which cannot be absorbed, into smaller, more easily absorbed molecules.



ENZYMES BREAKING DOWN FOOD INTO NUTRIENTS

Carbohydrates → Amylase, Maltase, Sucrase, Lactase → Glucose

Proteins → Pepsin, Trypsin, Chymotrypsin → Amino Acids

Fats → Lipase → Fatty Acids & Glycerol

Too much or too little?

Eating too much or too little can cause problems. Too much fat may cause heart disease and can make people overweight. Very overweight people are obese. People starve and become weak if they eat too little. Starvation and obesity are both forms of malnutrition. Other forms include deficiency diseases such as scurvy, which is due to a lack of vitamin C.




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