



Balanced Diet	Nutritional Energy Calculations	Consequences of an Unbalanced Diet	Digestive System Structure and Function	Digestive System Enzymes and Absorption	Breathing	Gas Exchange	Heart	Effects of Smoking and Asthma
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Key Words	
Key Word	definition
Enzyme	Substance which speeds up chemical reactions of digestion
Fibre	Parts of plants which cannot be digested which helps the body eliminate waste
Protein	Helps the body to build new tissue for growth and repair
Carbohydrates	Body's main source of energy
Lipids (fats and oils)	A source of energy. Found in butter, milk, eggs and nuts.
Alveoli	Small air sacks found in the bronchioles
Digestion	Breaking down of large food molecules into smaller ones so they can travel in our blood.
Respiration	Chemical reaction which releases energy, and it happens in the mitochondria of all our cells.
Balanced diet	A diet consisting of a variety of different types of food and providing enough of the nutrients necessary for good health

Misconceptions

Breathing and respiration are **not** the same thing
(Respiration is a chemical reaction)

Mitochondria do not **make** energy
(mitochondria -release energy by respiration)

Key questions

Name the functions of the food groups.

What are the organs in the digestive system and how do they work together in digestion?

How are the small intestines adapted for absorption?

Describe the structure of the blood vessels

Balanced Diet		
Component	Function	Examples
Carbohydrates	Main source of energy. Two types of carbohydrates are starch and sugar	Potatoes, pasta and sugar
Proteins	Growth and repair of cells	Eggs, meat, nuts and fish
Fat	Store of energy and needed for insulation	Butter and oils
Fibre	Needed for intestinal health and to help keep food moving along the bowels	Bread and baked beans
Vitamins and minerals	Needed in small amounts to keep our body healthy	Fruits, leafy green vegetables and milk
Water	Main component of cytoplasm and the blood	Water

Nutritional Values

An unbalanced diet contains too much or too little of a particular nutrient.

Obesity is caused by a person taking in more energy than the body uses up and causes the person to store extra fat. The effects are high blood pressure and increased chance of heart disease.

Starvation is caused when people do not get enough food to eat so they become very underweight. This effects are slow growth in children, becoming more susceptible to infections and irregular periods in women.

Deficiency diseases can be caused when you have too little of one nutrient. For example:

Scurvy – caused by lack of vitamin C and causes swollen gums which can cause bleeding gums and teeth can fall out.

Rickets – caused by lack of vitamin D and causes skeletal deformities

Constipation – causes stomach pain and difficulty going to the toilet by fibre deficiency.

Nutritional Values

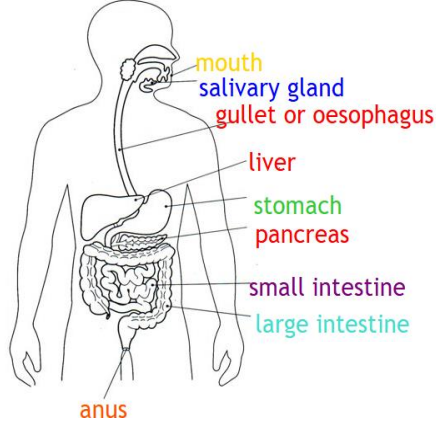
Nutritional values are found on food labels. You can see how much of each component is in the food.

The amount of energy you need per day depends on:

- Body mass
- Age
- Amount of daily activity

Digestive System

Component	Function
Anus	Faeces leaves the body through this
Mouth	The food is chewed up here and mixed with saliva
Small Intestine	Digested food is absorbed through the wall into the blood
Rectum	Undigested food is stored here before leaving the body through the anus
Stomach	A muscular bag which contains hydrochloric acid to kill bacteria
Pancreas	Releases enzymes into the small intestine
Gullet/oesophagus	Carries food to the stomach by the muscular contraction of its walls.
Liver	Makes bile which is stored in the gall bladder and released into the small intestine
Salivary gland	Saliva is made here. It contains an amylase to begin the digestion of starch
Large intestine	Water is removed from the undigested food here and reabsorbed back into the body



Digestive Absorption

Effects of Asthma

Heart

Enzymes are biological catalysts which speed up the break down of large insoluble molecules into smaller soluble ones.

Asthma is a chronic condition which affects the bronchioles. It causes coughing, wheezing, chest tightness and shortness of breath

Capillary – One cell thick walls
 Artery – Carries blood away from the heart and has thick elastic walls
 Veins – Carries blood back to the heart. They have thinner walls than arteries.

Enzyme	Digests	Produced
Protease	Proteins	Pancreas, stomach and small intestine
Carbohydrase . Amylase	Carbohydrates / starch	Pancreas, mouth and small intestine
Lipase	Fats / lipids	Pancreas and small intestine

During an asthma attack the bronchioles become narrowed due to inflammation which makes it difficult to breathe. As a person coughs the muscles tighten which causes constriction around the airways.

Breathing and Gas Exchange

Effects of Smoking

Breathing moves air in and out of lungs.
 Cellular respiration is a process happening in the mitochondria of cells, where energy is released.

Alveoli are tiny air sacs where gas exchange happens.
 They are adapted for this by:

Contents of a cigarette/smoke:

- Nicotine (addictive drug)
- Tar (contains cancer causing chemicals)
- Carbon monoxide (binds to haemoglobin instead of oxygen)

When we breath the air flows through the trachea into the bronchi in the lungs, where it then travels into narrower tubes called bronchioles where the oxygen then moves into the alveoli.

Smoking can cause lung cancer, emphysema (damaged alveoli) and bronchiolitis. (inflamed bronchi from coughing)