Year 8 Term 1 Science Knowledge Organiser — Digestion

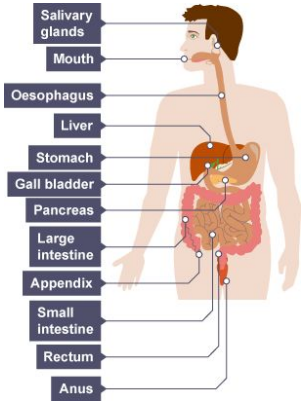
CORE - MUST KNOW FOREVER.....

Key Terms:

Tissue: a group of cells working together to perform a specific function.
Organ system: a group of organs working together to perform one specific function.
Digestion: The breaking down of food into smaller pieces so that it can be absorbed into the blood.
Enzyme: A biological catalyst that helps to break down food.
Faeces: Food that cannot be broken down or absorbed that is excreted from the body.
Malnourished: someone who doesn't get enough nourishment to function properly.
Deficient: not getting enough of something

Components of a Healthy Balanced Diet

- Carbohydrates
- Fats
- Proteins
- Vitamins
- Minerals
- Fibre (roughage)
- Water (fluids)



A **balanced diet** is essential to keep us healthy. If we eat an unhealthy diet we are more at risk of certain diseases and more at risk of being overweight.

The **energy** we get from our food is measured in units called **calories.**
A typical adult should have around 2000-2500 calories (kcal) per day. Less for children.

GOOD TO KNOW...

The stomach contains **epithelial tissue** (skin), **glandular tissue** and **muscular tissue**

There are 2 types of digestion:
Mechanical digestion is where food is broken down by force, for example by the teeth in the mouth.
Chemical digestion is where food is broken down by chemicals such as enzymes.

The **small intestine** is where digested food is absorbed into the blood. The small interested contains 3 main types of enzymes that break down our food into smaller chunks to be absorbed:
Enzymes that break down carbohydrates are called **carbohydrases.**
Enzymes that break down fats and oils are called **lipases.**
Enzymes that break down proteins are called **proteases**.

Enzymes cannot work properly if they get too hot or too cold, or if it is too acidic or too alkaline. **pH** is a measure of acidity/alkalinity.

The **large intestine** is where most water is absorbed from our food and into our blood.

The inside of the intestines have a **very large surface area** that speeds up the absorption of food molecules by diffusion.

In developed countries people often have easy access to unhealthy foods meaning that they are more likely to become **overweight or obese.**
Vitamins and minerals are essential in the diet in small amounts. If you are deficient in certain minerals it can cause all sorts of health problems.

Certain deficiencies like iron deficiency (**anemia**) or vitamin c deficiency (**scurvy**) can be treated by a doctor or over the counter medications

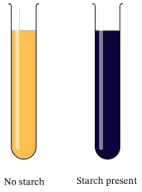
HOW TO....

Food Tests

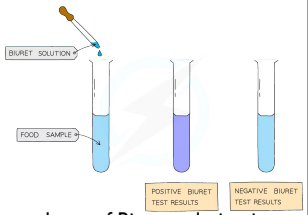
Food tests are simple techniques you can use to test if a certain food group is present in a substance.

To test for starch:

1. Add one or two drops of iodine to your food sample
2. Give it a stir/shake
3. If the iodine stays orange then there is no starch present, if the iodine goes blue/black then starch is present.



Test for protein:



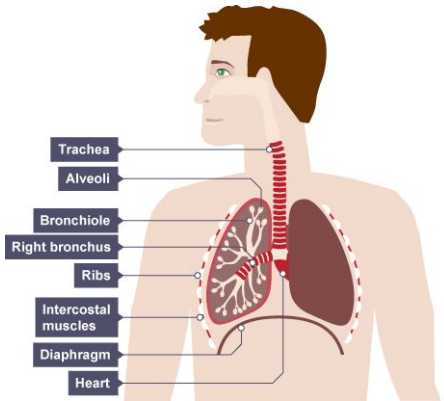
1. Add one or two drops of Biuret solution into your food sample
2. Give is a stir/shake
3. If the sample stays blu then there is no protein present, if the sample goes purple/mauve then there is protein present

Year 8 - Term 1 - Science Knowledge Organiser [Breathing]

CORE - MUST KNOW FOREVER...

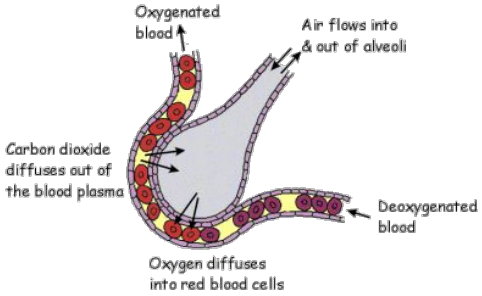
Key terms and definitions

Organ- A group of tissues working together for a common function
Organ system- A group of organs working together for a common function
Diffusion = Movement of particles from an area of high to low concentration.
Breathing = The movement of gases into and out of the lungs
Alveoli- Air sac where gas exchange occurs
Diaphragm- A sheet muscle found underneath the lungs
Ribs- Bones which surround the lungs to protect them



GOOD TO KNOW...

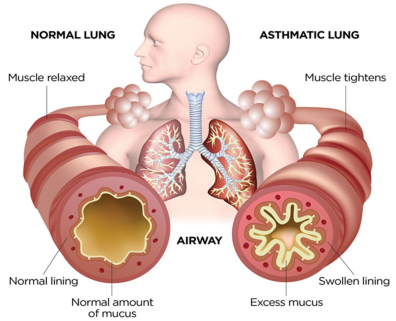
Diffusion is how the gases are exchanged in the alveoli



They are adapted for gas exchange because

1. Large surface area
2. Good blood supply (maintains concentration gradient)
3. Thin walls
4. Moist lining

The effect of asthma on lungs



HOW TO...

Using a table to compare gases

Gas	% air breathed in	% air breathed out
Oxygen	21	16
Carbon dioxide	0.04	4
Nitrogen	78	78

You need to first look at whether any number are increasing. Starting with a sentence
'The percentage of carbon dioxide increases from 0.04 when being breathed in to 4 when being breathed out'

Next you look to look if any of the numbers are decreasing. You could use a sentence like this
'Oxygen percentage being breathed in is 21% and this decreases to 16% when compared to being breathed out'

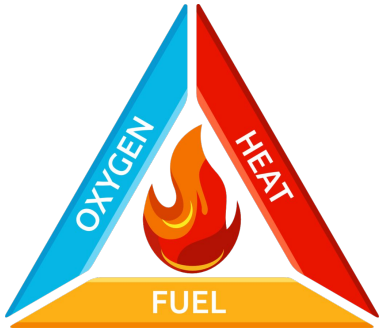
Finally you would look to check if any gases hasn't changed.
'Nitrogen percentage doesn't change between breathing in and breathing out'

Year 8 Term Science Knowledge Organiser — Types of Reaction

CORE - MUST KNOW FOREVER.....

In a chemical reaction, atoms are not created or destroyed. Therefore the total mass does not change during a chemical reaction. The chemicals that react are called the reactants and the chemicals that are made are called the products.

Combustion means burning in oxygen. The following things are needed for combustion:



GOOD TO KNOW...

Chemical bonds between the atoms are broken and re-made during a chemical reaction. Chemical reactions involve a change in energy. If energy is given out, this is an exothermic reaction. If energy is taken in, this is an endothermic reaction.

When a fuel combusts, the products that are produced are carbon dioxide and water.
Incomplete combustion is combustion without sufficient oxygen. This will lead to unwanted products of carbon monoxide and soot being produced.
Complete combustion has enough oxygen to burn and release a lot of energy.
Combustion is an example of an oxidation reaction.

HOW TO....

Thermal decomposition of copper carbonate

When copper carbonate thermally decomposes, it produces carbon dioxide as one of its products. It will look like the mass is decreasing.

1. Use a balance to measure 10g of copper carbonate. It is a green power
2. Place the powder into a boiling tube
3. Heat over a bunsen burner using the blue flame
4. Allow the powder to cool
5. Observe the new colour of the powder
6. Use a balance to measure the new mass of the product

Year 8 Term Science Knowledge Organiser — Types of Reaction

CORE - MUST KNOW FOREVER.....

Oxidation is the gain of oxygen
Thermal decomposition is breaking down a compound using heat. The substance doesn't have to react with another chemical.

A catalyst speeds up the rate of a chemical reaction. This means that the reaction happens faster.

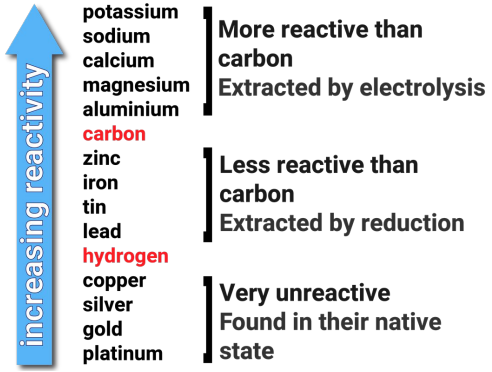
The reactivity series compared how reactive different elements are.

Displacement - a more reactive element will displace a less reactive element from its compound

GOOD TO KNOW...

A catalyst will speed up a chemical reaction without being used up so can be used again. In industry, catalysts will be used to make reactions cheaper.

An element below carbon on the reactivity series can be extracted by reduction with carbon. If the element is more reactive than carbon, it must be extracted by an expensive process called electrolysis.



HOW TO....

Thermal decomposition of copper carbonate
When copper carbonate thermally decomposes, it produces carbon dioxide as one of its products. It will look like the mass is decreasing.

1. Use a balance to measure 10g of copper carbonate. It is a green power
2. Place the powder into a boiling tube
3. Heat over a bunsen burner using the blue flame
4. Allow the powder to cool
5. Observe the new colour of the powder
6. Use a balance to measure the new mass of the product