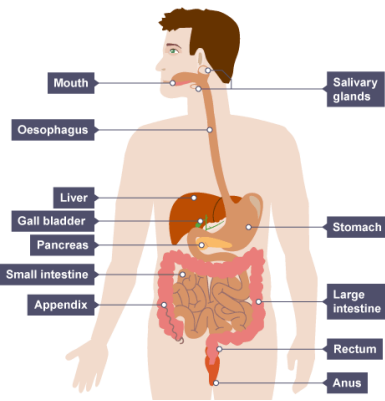


Knowledge Organiser – Year 8 Nutrition and Digestion

The Digestive System

The food we eat has to be broken down into other substances that our bodies can use. This is called [digestion](#). Without digestion, we could not absorb food into our bodies and use it. Digestion happens in the [digestive system](#), which begins at the mouth and ends at the anus.

The Digestive System



After we swallow, our food passes through these organs in turn:

- oesophagus or gullet
- stomach
- small intestine
- large intestine.
- anus

Stages of digestion

- Food is digested in the mouth, stomach and small intestine.
- Digested food is **absorbed** into the bloodstream in the small intestine.
- Excess water is absorbed back into the body in the large intestine.
- Any undigested food passes out of the anus as faeces when we go to the toilet.

Enzymes

Our teeth break food down into small pieces when we chew. This is only a start to the process of digestion, as chewed pieces of food are still too large to be absorbed by the body. Food has to be broken down chemically into really small particles before it can be absorbed. Enzymes are the biological catalysts needed to make this happen quickly enough to be useful.

Enzymes are proteins that can break large molecules into small molecules.

Different types of enzymes can break down different nutrients:

1. amylase and other carbohydrase enzymes break down starch into sugar
2. protease enzymes break down proteins into amino acids
3. lipase enzymes break down lipids (fats and oils) into fatty acids and glycerol

| Nutrient | Use in the body | Good sources |
|------------------------|---|--|
| Carbohydrate | To provide energy | Cereals, bread, pasta, rice and potatoes |
| Protein | For growth and repair | Fish, meat, eggs, beans, pulses and dairy products |
| Lipids (fats and oils) | To provide energy. Also to store energy in the body and insulate it against the cold. | Butter, oil and nuts |
| Minerals | Needed in small amounts to maintain health | Salt, milk (for calcium) and liver (for iron) |
| Vitamins | Needed in small amounts to maintain health | Fruit, vegetables, dairy foods |
| Dietary fibre | To provide roughage to help to keep the food moving through the gut | Vegetables, bran |
| Water | Needed for cells and body fluids | Water, fruit juice, milk |

If the amount of energy you get from your food is different from the amount of energy you need, your diet will be imbalanced:

- too little food may lead to a person being underweight
- too much food may lead to a person being overweight

Deficiencies

If you have too little of a particular nutrient, we say that you have a [deficiency](#) in that nutrient

1. iron deficiency can cause anaemia, where there are too few red blood cells
2. iodine deficiency can cause a swelling in the neck called goitre
3. vitamin A deficiency can cause blindness
4. vitamin D deficiency causes rickets, which makes the legs bow outwards in growing children
5. vitamin C deficiency causes scurvy, which makes the gums bleed (see picture below)



Energy needs

Each person needs a different amount of energy depending on factors such as:

- gender (male or female)
- age
- amount of daily activity

If you look on the side of food packets you will see the food's energy content. This is usually measured in kilojoules, kJ. For example, a one-year-old baby needs 3850 kJ each day to continue to grow, whereas an adult Olympic swimmer in training needs 15,600 kJ each day. Someone who sits at a desk all day will need less food than their twin who climbs ladders all day to wash windows.

