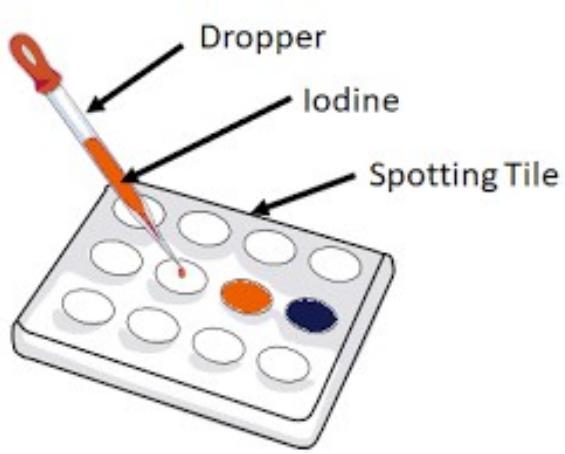
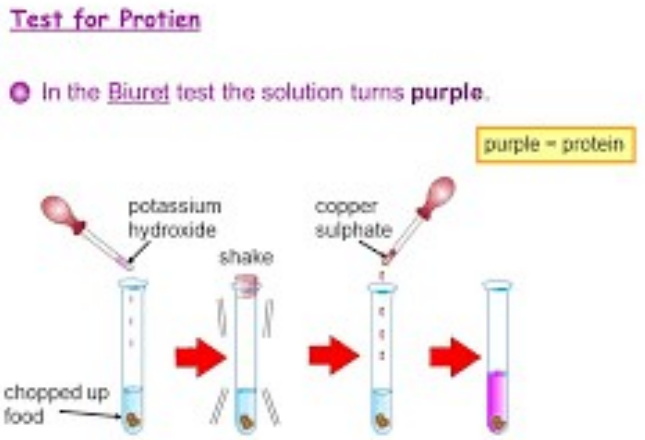
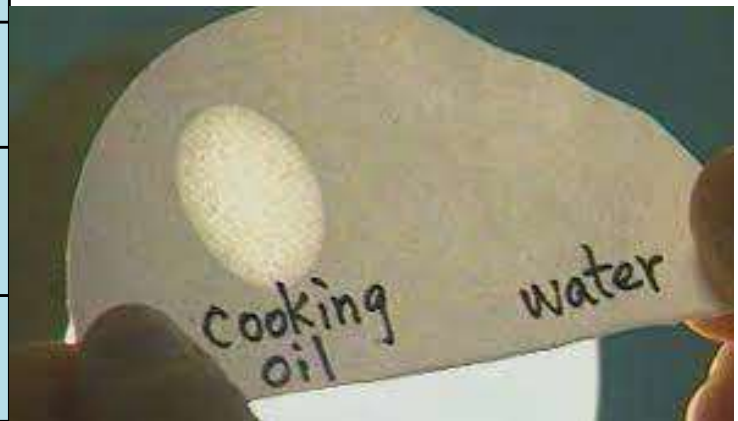
Biology 8a Food and Nutrition

1	Your diet (what you eat) provides raw materials for your body which are needed for energy, growth, repair and health.
2	The raw materials we get from food are called nutrients and include carbohydrates, fats, proteins, vitamins and minerals. We also need water and fibre in our diets.
3	Starch is a type of carbohydrate and can be found in potatoes, rice, pasta and bread.
4	To test a food source for starch we add two drops of iodine and if it turns a blue or black colour this indicates that starch is present in the food. If starch is not present in the food there will be no colour change.
5	Protein can be found in lots of foods including meat, dairy products, tofu, pulses, nuts and seeds.
6	To test a food source for protein we add 5 drops of biuret solution and if it turns a purple colour, this indicates there is protein present in the food. If protein is not present in the food there will be no colour change.
7	Fats can be found in oils (olive, sunflower etc), avocados, nut butters, spreads such as butter and margarine.
8	To test a food source for fats we rub a small dry sample on some white paper. If the food contains fats it will leave a greasy mark on the paper. If fats are not present in the food there will be no change to the paper.
9	People who lack a nutrient for a long time can suffer from a deficiency disease. We call these types of disease malnutrition.
10	Examples of malnutrition include kwashiorkor (lack of protein), scurvy (lack of vitamin C), rickets (lack of vitamin D), anaemia (lack of iron) and night blindness (lack of vitamin A).
11	People whose food contains more energy than they need can become overweight or even obese. This can make people more at risk for developing lots of different diseases.







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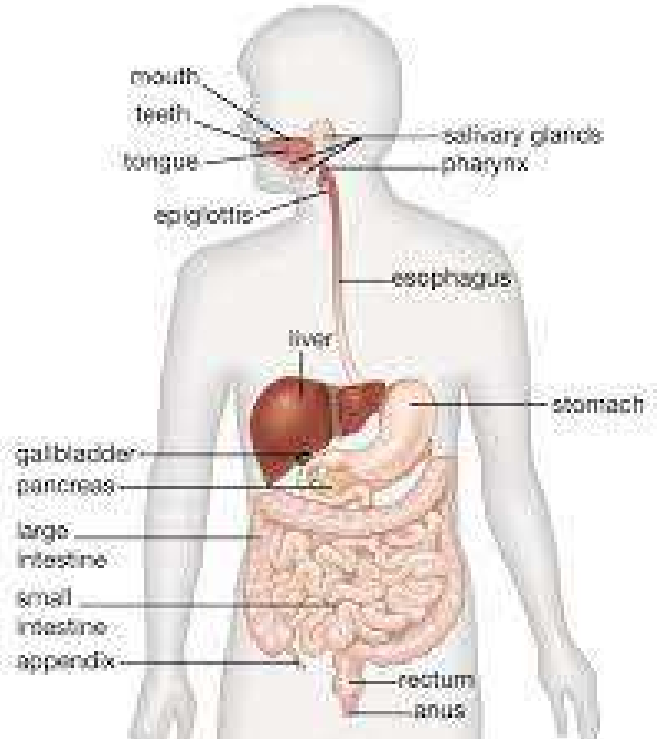
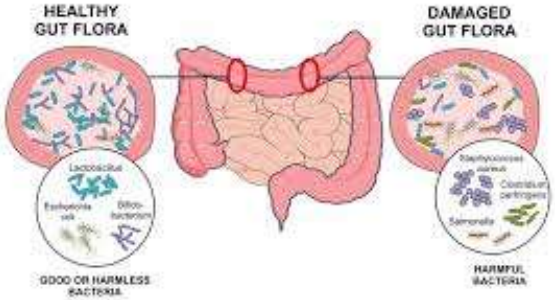
12	Our food has to be broken down by the body to access the nutrients stored in food that we need. This process is called digestion and involves lots of different parts of the body.
13	Your teeth grind food into small pieces and mix it with saliva. This helps to digest food as the saliva contains enzymes and also makes it easier to swallow.
14	Enzymes are substances that speed up the breaking down of large molecules into smalle ones. They are biological catalysts.
15	When you swallow food enters the oesophagus and muscles contract to help push the food towards the stomach.
16	In the stomach food is churned with stomach acid which is acidic and contains more enzymes.
17	In the small intestine, more enzymes are added and the liver adds a substance to help digest fats. This is also where small molecules of food are absorbed.
18	Food that we cannot digest (e.g. fibre) goes into the large intestine and water is removed, forming faeces.
19	The rectum stores faeces and it is then pushed out of the anus in a process called egestion.
20	It takes on average 24-48 hours for food to move through the gut.
21	Bacteria in your gut feed on your food and can even digest some of the foods you cannot. As the bacteria digest some of this food they can even make some essential vitamins that we need!

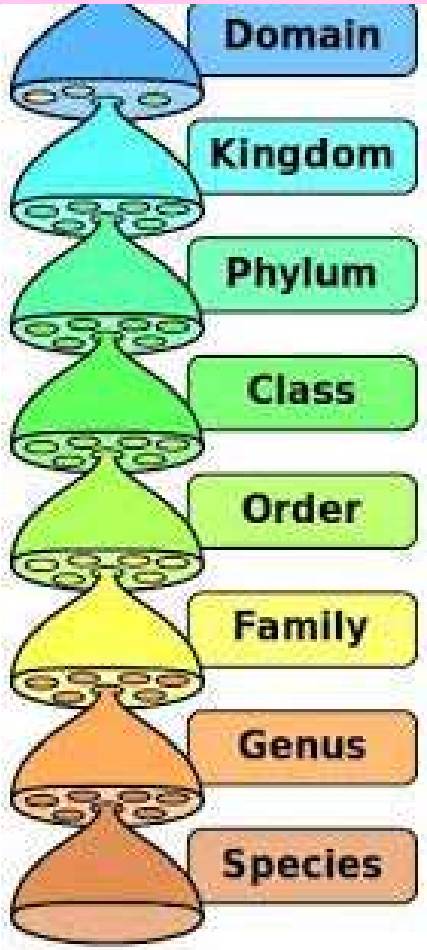


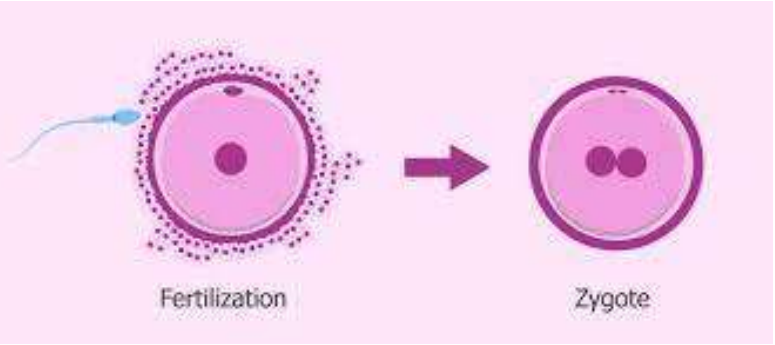


22	Diffusion is the movement of molecules from an area of high concentration (where there are lots) to an area of low concentration (where there. is very few of them).
23	Molecules from food diffuse out of the small intestine and into the blood stream.
24	The small intestine is adapted for diffusion by having a large surface area. This means there are lots of folds in the wall of the small intestine and contains lots of little finger shaped villi.
25	The folding and the villi of the small intestine make sure there is lots of space for molecule to diffuse across, increasing the speed at which the molecules can enter the bloodstream.

Biology 8b Plants and their reproduction

1	Many medicines originally came from plants including aspirin from willow tree bark and heart medicine from foxglove plants.
2	Plants are also used in many fabrics, dyes, perfumes, soaps and shampoos.
3	Organisms are classified into 5 kingdoms based on how they feed, if they are made up of one cell or multiple cells, if they have a nucleus and if they contain cell walls.
4	The 5 kingdoms are Animals, plants, fungi, protoctists and prokaryotes.
5	Each of the 5 kingdoms can be split into smaller and smaller groups until we reach the smallest two groups; genus and species.
6	The name of the genus and species to which an organism belongs determines its scientific binomial name. For example, humans belong to the genus homo and the species sapiens, so our binomial name is *Homo sapiens*.
7	Biodiversity is important because a lot of different species within an ecosystem depend on each other for survival.
8	If a species goes extinct it will affect other organisms in a habitat and may even cause them to go extinct too.
9	Sexual reproduction occurs when two organisms breed and produce new organisms.
10	Members of two different species cannot usually reproduce, but if they do, the offspring are called hybrids. The hybrids are not fertile (they are unable to reproduce).
11	In sexual reproduction the offspring inherit characteristics from their parents.
12	In sexual reproduction, the parents produce sex cells called gametes which carry the instructions to make a new organism.
13	The male and female gamete join together to form a zygote (a fertilsed egg cell).





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14	Asexual reproduction does not need gametes. Instead, part of the parent forms a new organism. This can happen in many organisms including bacteria and plants.
15	In asexual reproduction the offspring will be identical to the parent. There will be no variation.
16	Plants can also reproduce sexually. Most flowers contain both male and female reproductive organs.
17	The stamen is the male reproductive organ in a plant. This contains the anther. The anther makes pollen grains, each of which contains a male gamete.
18	The carpel is the female reproductive organ in a plant. This contains the ovule. The ovule contains a female gamete.
19	The pollen grains can be transferred to other plants by sticking to the body of insects or being spread by the wind depending on the plant. Both of these processes are called pollination.
20	Some plants try to stop self-pollination by having half of the plants with flowers that contain male reproductive organs and half that contain female reproductive organs.
21	A zygote goes through cell division to produce an embryo. The embryo develops a tiny root and a tiny shoot.
22	The ovule becomes the seed and inside the seed is the embryo. A hard seed coat forms around the seed to protect it.
23	When the seed starts to germinate, it uses the store of food to allow the embryo to grow.
24	The ovary swells up and becomes the fruit around the seed.
25	Fruits spread seeds away from the parent plants through seed dispersal.
26	Life processes such as respiration occur extremely slowly in a seed. It is still alive but it is dormant. They remain dormant until the resources for germination are available.
27	Plants need to make their own food via photosynthesis. To do this they need carbon dioxide (from the air), water and light from the sun. They use this to make oxygen and glucose which is a simple type of sugar used for respiration.
28	Many plants depend on other organisms for survival. We call this interdependence.