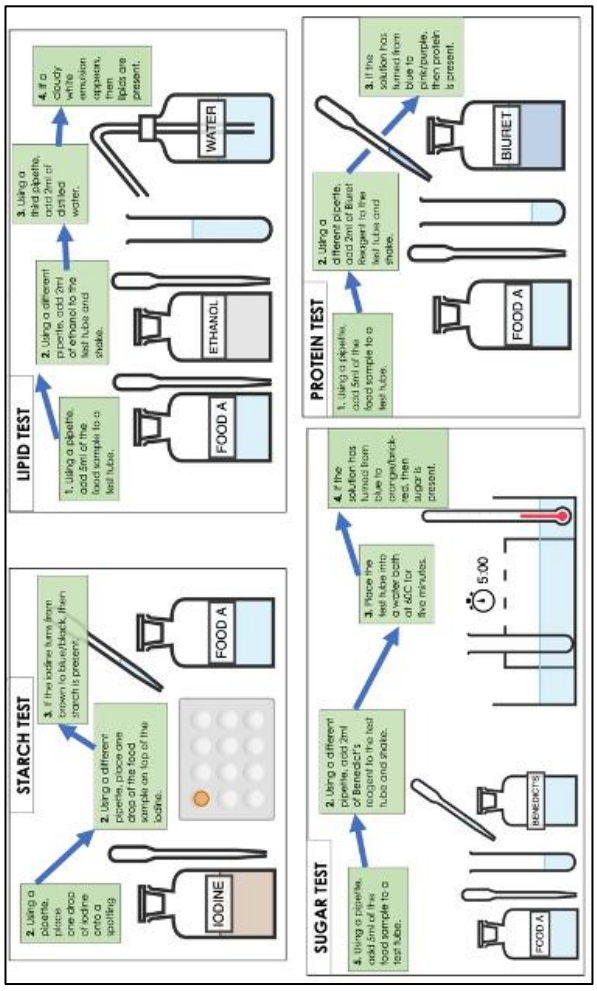
Diet and Nutrition

1. The contents of a healthy human diet include carbohydrates, lipids (fats and oils), protein, vitamins, minerals, dietary fibre and water

2. A balanced diet includes all the nutrients our body needs in the **right quantities**
3. **Carbohydrates** are important to provide energy. Carbohydrates are found in foods such as bread, potatoes, rice and pasta
4. **Lipids** (fats) are important for providing energy and insulation. Lipids are found in foods such as nuts, dairy products, meat, oils and sweets
5. **Proteins** are important for growth and repair of cells and tissues. Proteins are found in foods such as eggs, pulses, fish, meat, nuts and dairy products
6. **Vitamins** and **minerals** are important because they all have roles in essential processes in the body. Vitamins and minerals are found in high quantities in fruit and vegetables, but are provided by all parts of the diet
7. Calcium is an example of a mineral used in making bones and teeth
8. **Fibre** is important for adding bulk to food and helping it pass through the digestive system. Fibre is found in foods such as fruit, vegetables and wholegrain cereals
9. **Water** allows for transport of substances around the body and for chemical reactions to occur in cells
10. Malnutrition occurs when a person does not have a balanced diet
11. Imbalances in the diet can result in health consequences, including obesity, starvation and deficiency diseases

Food Tests

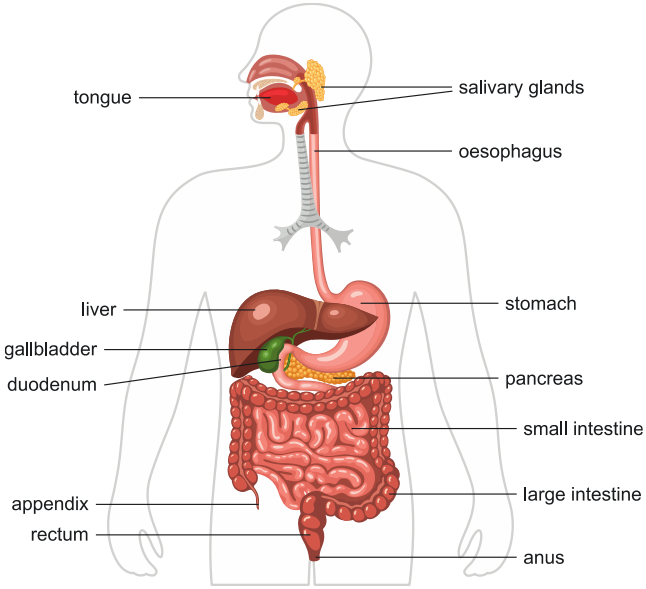
12. **Iodine** solution changes colour from brown to black in the presence of **starch**
13. **Benedict's** reagent changes colour from blue to orange/red when heated in the presence of simple sugars such as **glucose**
14. **Biuret** reagent changes colour from blue to purple in the presence of **protein**



The Digestive System

15. The digestive system **breaks down** molecules in food into soluble substances that can be **absorbed** and used by cells

16. Food passes through the **mouth**, **oesophagus**, **stomach**, **small intestine**, **large intestine**, and **rectum**



17. **Mechanical** digestion is the physical cutting, squashing and churning of food in the digestive system, e.g. by teeth or the stomach
18. **Chemical** digestion is when enzymes and other chemicals are used to speed up reactions in the digestive system
19. In the mouth, mechanical and chemical digestion occur
20. The salivary glands secrete enzymes which begin the process of chemical digestion
21. The oesophagus moves food into the stomach
22. In the stomach, mechanical and chemical digestion occur
23. The stomach contains acid
24. Water is absorbed into the bloodstream from the large intestine
25. Undigested food leaves the digestive system via the anus
26. Bile is made in the liver and stored in the gall bladder
27. Bile is alkaline and neutralises the acid in the stomach

The Small Intestine

28. **Chemical** digestion takes place in the small intestine. Small, soluble molecules move into the bloodstream by **diffusion**
29. The small intestine is well adapted to its function because it has many **villi** which increase the **surface area** to increase diffusion of nutrient molecules into the blood.
30. It also has a good **blood supply** which allows nutrient molecules to be absorbed into the blood

Enzymes

31. Enzymes speed up chemical reactions in the body
32. Digestive enzymes break down large nutrient molecules into smaller molecules that can be absorbed into blood and used by cells
33. **Carbohydrases**, such as amylase, break down **carbohydrates** into simple **sugars**
34. **Lipases** break down **lipids** into **glycerol** and **fatty acids**
35. **Proteases** break down **proteins** into **amino acids**
36. The lock and key theory models how enzymes work by having an active site that is a specific shape to the substrate it joins to

Plant Nutrition

37. Plants require minerals for healthy growth
38. Plants need **nitrates** to make proteins for growth.
39. Plants need **magnesium** to make chlorophyll.
40. Plants get the magnesium and nitrates they need from the **soil** via their **roots**
41. Plants can be damaged by deficiencies. A deficiency in magnesium affects **photosynthesis**