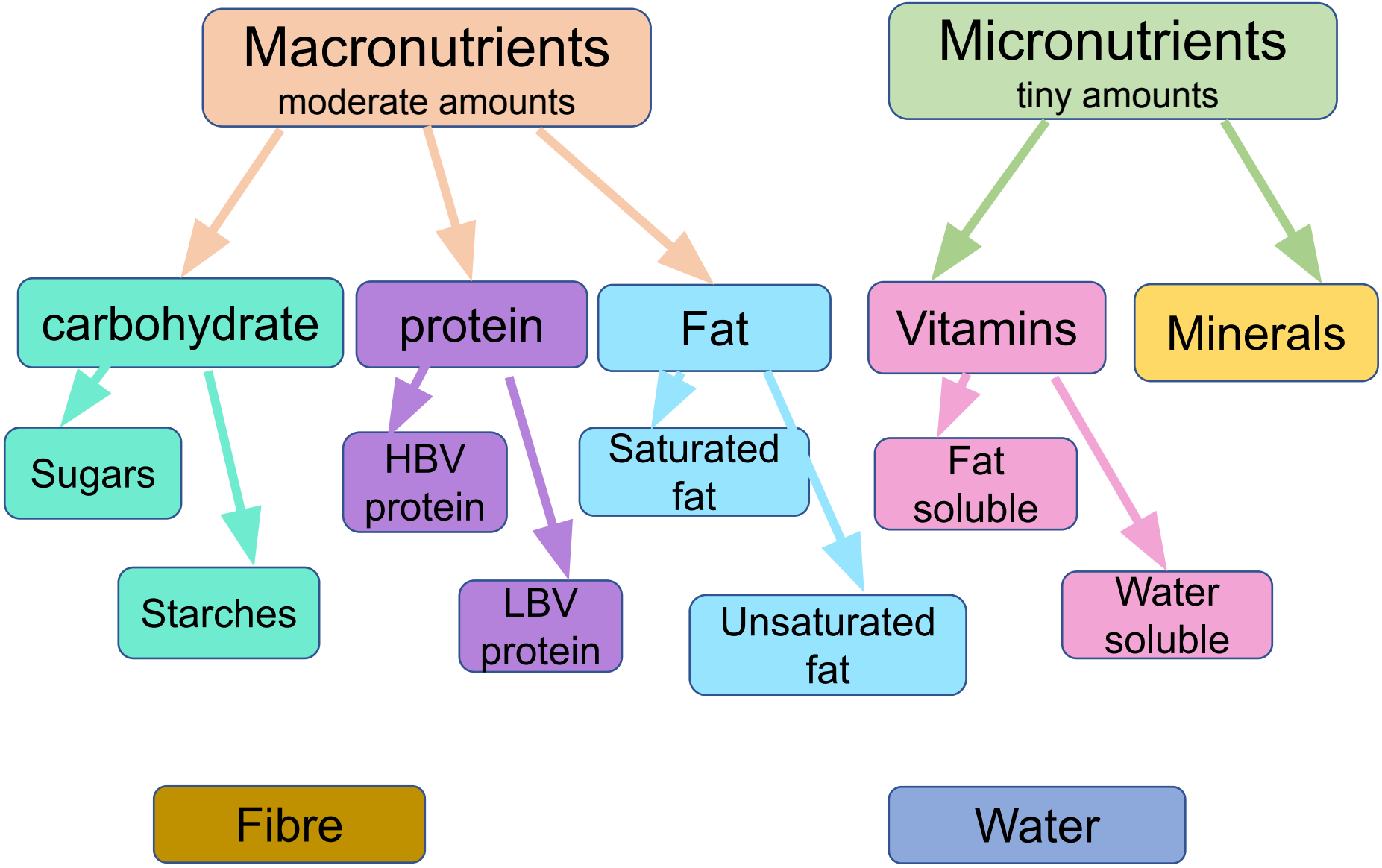
AC 1.1
Functions of nutrients in the body

Nutrients


Macronutrients
moderate amounts
Micronutrients
tiny amounts
carbohydrate
protein
Fat
Vitamins
Minerals
Sugars
Starches
HBV protein
LBV protein
Saturated fat
Unsaturated fat
Fat soluble
Water soluble
Fibre
Water

Nutrients

Nutrients are divided into …… and …… nutrients.

…….. ..…… are needed by the body in……. amounts, the

GDA (Guideline Daily Amounts) is in Grams.

…… ..…… are needed by the body in …….. amounts such as

micrograms

……. And …… are not actually nutrients but are essential to health.

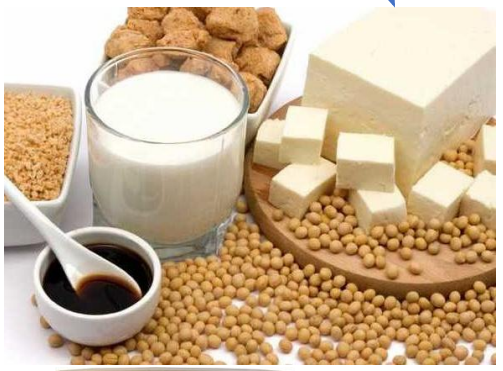
water nutrients macro small maco large micro fibre micro nutrients

What is the function of protein?

- Protein provides the amino acids for the body to **grow** especially in children and pregnancy
- Protein is used to **repair** body tissues after illness, injury or surgery
- Produces enzymes for digesting foods
- A secondary source of **energy** for the body
- Protein contains a variety of amino acids with different forms of protein containing all or some of the amino acids needed by the body

Proteins : HBV

Proteins that contain all the amino acids needed by the body are called High Biological Value HBV – all animal sources except soya



Proteins : LBV

Plant proteins that contain some of the amino acids needed are called Low Biological Value LBV – all plant sources. By eating a variety of LBV you can get all the amino acids needed

Protein supplements

The only people who might need to use protein supplements are serious athletes who push their body very hard. Eating a balanced diet can provide all the protein needed by the body. GDA protein = 50g

Soya Beans

Whole soybeans are an excellent source of protein and dietary fibre. Soy protein is the only vegetable with a complete protein. Raw soybeans are toxic to humans so must be cooked! Soya beans can be made into many products including soy flour and soymilk!

Textured soya is a protein made from wheat and soya beans. It can be made into different shapes and sizes and even made into products which look like ham, beef and poultry.

Quorn is the name of the brand! Mycoprotein is the main ingredient in all Quorn products. It's made from a member of the fungi family. It is low in fat and can be made into many shapes and sizes. (HBV source of protein)

Tofu is soya bean curd and can be used in stir fries and other dishes. It is high in protein and also calcium!

What is the function of fat?

- Fat provides the body with essential fatty acids and **energy**.
- One gram of fat provides 37 kJ.
- Fat provides a store of energy for the body.
- Fat also provides a layer of **protection** for the major organs in the body - **insulates**
- Fat carries important fat soluble vitamins (A, D, E and K) and is important for their absorption.
- Contains essential fatty acids such as omega3
- Eating food with fat in helps you feel full.

Saturated fats

Saturated fat can be found in meat, cakes, biscuits, and lard. Mostly animal sources except coconut oil











Unsaturated fats

Monounsaturated and polyunsaturated fat can be found in rapeseed oil, olive oil, oily fish, avocado

Fats and oils

Fats
(solid at room temperature)

Saturated fat

Examples of fats; butter, margarine, lard and dripping.

Oils
(liquid at room Temperature)

Unsaturated fat

Examples of oils; corn oil, sunflower oil, peanut oil, sesame seed oil

What is the function of carbohydrate?

- Carbohydrate provides an important source of **energy** for the body.
- Carbohydrate provides 16kj per gram which is used both for energy to move and be active as well as energy for body processes such as breathing, heart beating
- Vitamin B (thiamine and riboflavin) help release the energy to the body
- All carbohydrates are converted to **glucose** when digested and this is converted to energy
- If the energy is not used up then it is stored as body fat

Carbohydrates: Starches

Starchy foods provide a **slow release** of **energy** and help our blood sugar levels stay the same so we don't feel tired. (Also known as complex carbohydrates)






Carbohydrates: Sugars

- Sugar gives a **fast release of energy** that means your blood sugar levels go up
- Some foods contain natural sugars such as milk, fruit & honey.




Many foods such as fizzy drinks, cakes, biscuits & jam contain added table sugars. This is the sugar that can be bad for our health and our teeth!



Watch out for hidden Sugars

- Food manufacturers add sugar to many foods and drinks to improve the taste & flavour.

- It is sometimes called hidden sugar because we may not realise it is there.

- Foods such as pasta sauce, soups, cereals, baked beans contain added sugar.

- Manufactures often try to disguise sugar by referring to it as glucose, dextrose, fructose.

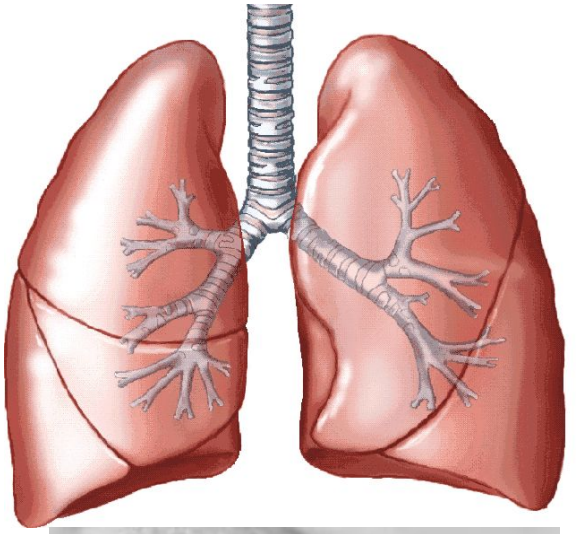
Vitamins and Minerals

Research Task

Use the resources available to complete the next page in your booklet.

Vitamin A

- Keep the **skin healthy**
- Helps with **vision** in dim light and colour vision
- Enable children to **grow**
- Keep **mucus membranes** that line the mouth, throat, lungs and digestive system moist and healthy.
- Antioxidant, which helps **prevent heart disease and cancers**.
- **Fat soluble**.



Where is vitamin A found?

- liver, whole milk, cheese, butter, margarine,
- carrots, dark green leafy vegetables
- orange coloured fruits, e.g. mangoes and apricots.





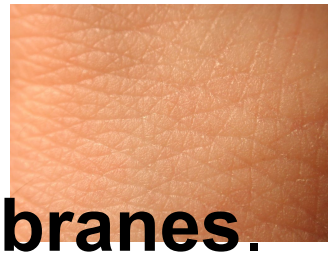



B Vitamins

- B vitamins are **water soluble** vitamins needed for the release of energy from food.

- .B1 Thiamin for the transfer of **energy from carbohydrates**

- B2 Riboflavin for the transfer of **energy from carbohydrates, fats and protein**



- B3 Niacin for **energy release, skin and membranes**.

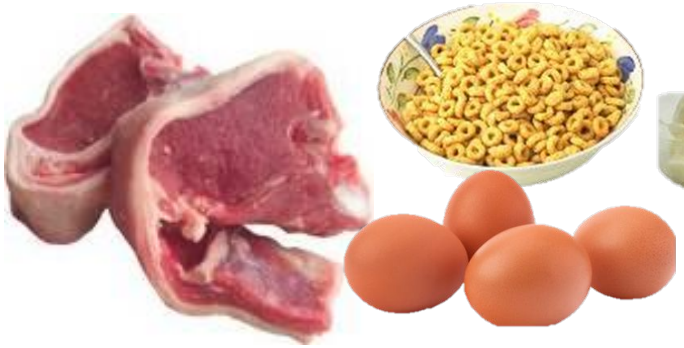
- B9 Folate helps make **red blood cells** and prevent spinal cord defects in unborn babies

- B12 Colbalbumin for **red blood cells** and **nerve cells**

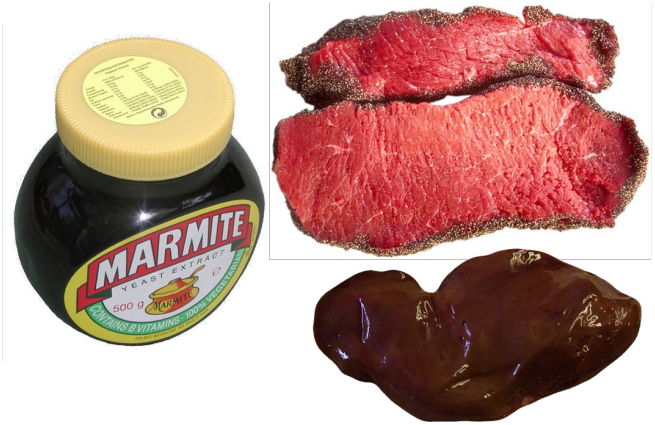
Where are B vitamins found?

B1 B2

B9

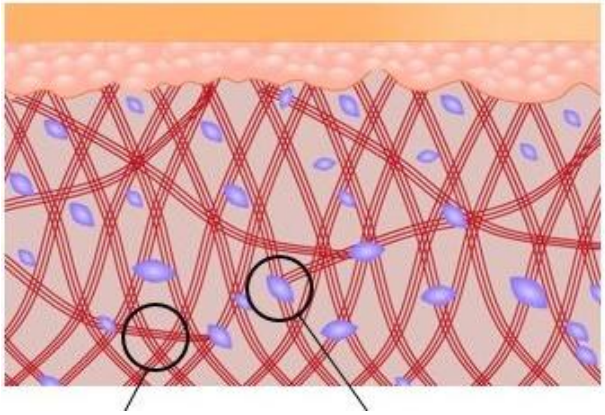


B3



B12

Vitamin C



Vitamin C is a **water soluble**

Helps to **maintain connective tissue**, which binds body cells

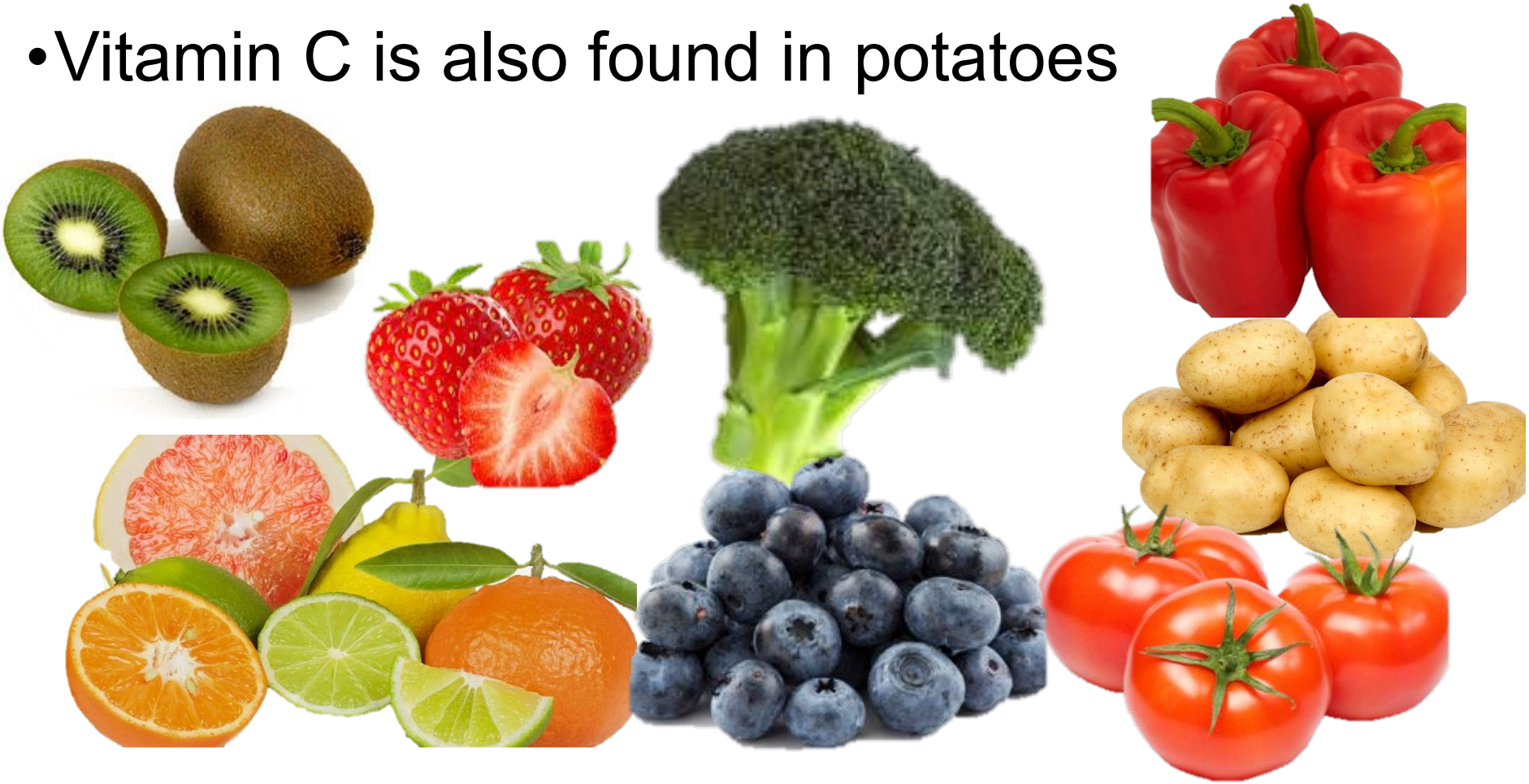
Vitamin C helps the body to **absorb iron** during digestion

Antioxidant, so aids in the prevention of heart disease and cancers.

Aids our **immune system**

Where is vitamin C found?

- Fresh fruits, especially citrus fruits and berries
- Green vegetables, peppers and tomatoes.
- Vitamin C is also found in potatoes

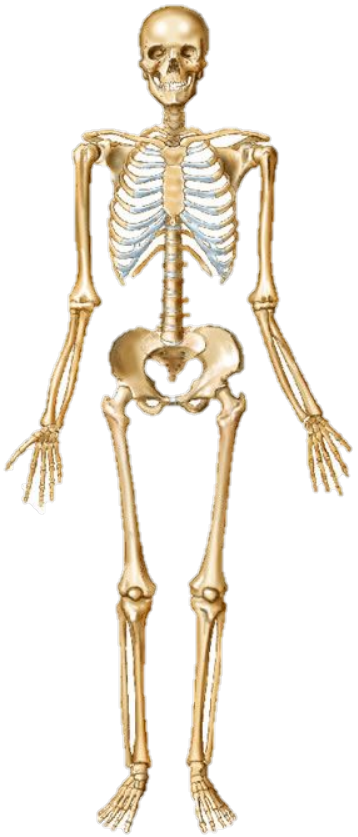


Vitamin D

Vitamin D is needed for the **absorption of calcium** and phosphorus from foods, to keep bones healthy.

Prevents disease suches as Rickets in children and osteoporosis in adults.

Fat soluble vitamin



Where is vitamin D found?

The sources of vitamin D include oily fish, eggs, fortified cereals and margarine.

The body can make vitamin D when the skin is exposed to sunlight, i.e. in summer in the UK.

Vitamin E

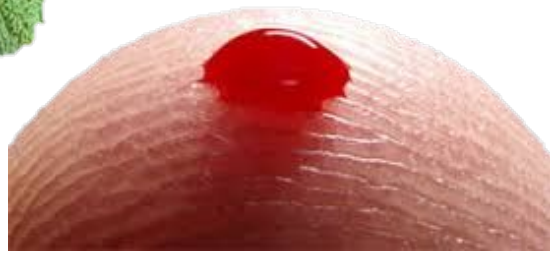
- Vitamin E helps maintain **healthy skin and eyes**, and strengthen the body's natural defence **against illness and infection**

- **Fat Soluble**

Soya beans, corn oil, olive nuts, nuts, seeds, whole wheat, vegetable fat spreads.

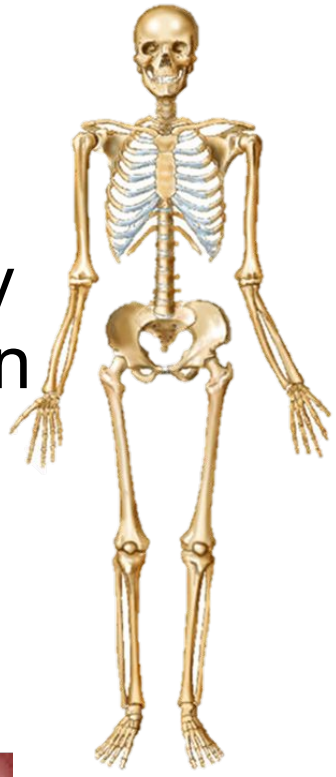
Vitamin K

- Vitamin K is needed for **clotting of blood** and is also required for normal bone structure.
- Infants are given vitamin K at birth.
- found in green leafy veg e.g. broccoli, lettuce, cabbage, spinach, liver and cheese



Calcium

- Calcium is very important when the bones are growing.



- Calcium is an important mineral needed by the body to **form, strengthen** and maintain **bones and teeth**;
- Make **nerves** and **muscles** work.
- for **blood clotting** after an injury.
- The skeleton contains about 99% of the body's calcium

Where is calcium found?

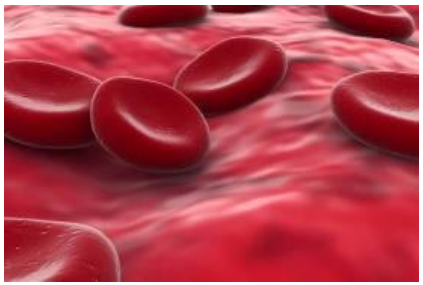
The sources of calcium are milk, cheese and other dairy products, some leafy green vegetables such as broccoli, fortified soya bean products and bread.

Vitamin D helps the body to absorb calcium.

Iron

- Makes **haemoglobin** in **red blood cells**.
- Haemoglobin picks up and **carries oxygen** to our cells, where it is used for **energy**.
- Prevents iron deficiency **anaemia**.

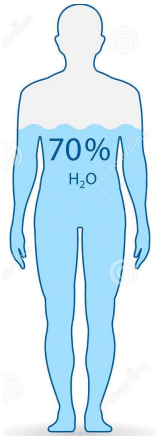
- There are two types of iron; one from animals sources and the other from plant sources



Where is iron found?

- Animal and plant sources.
- Liver , red meat, eggs, poultry, fish,
- Pulses, nuts, dried fruits, whole grains and dark green leafy vegetables.
- Iron from meat sources is easier for the body to absorb. Plant source iron needs vitamin C to be absorbed

Sodium



- Sodium is found in all cells and body fluids.
- It helps to regulate **body water** content and balance **electrolytes**.
- Makes nerves and muscles work properly.
- Sodium is also needed for the absorption of some nutrients and water from the gut
- Sodium is a component of table salt, known as sodium chloride (NaCl).

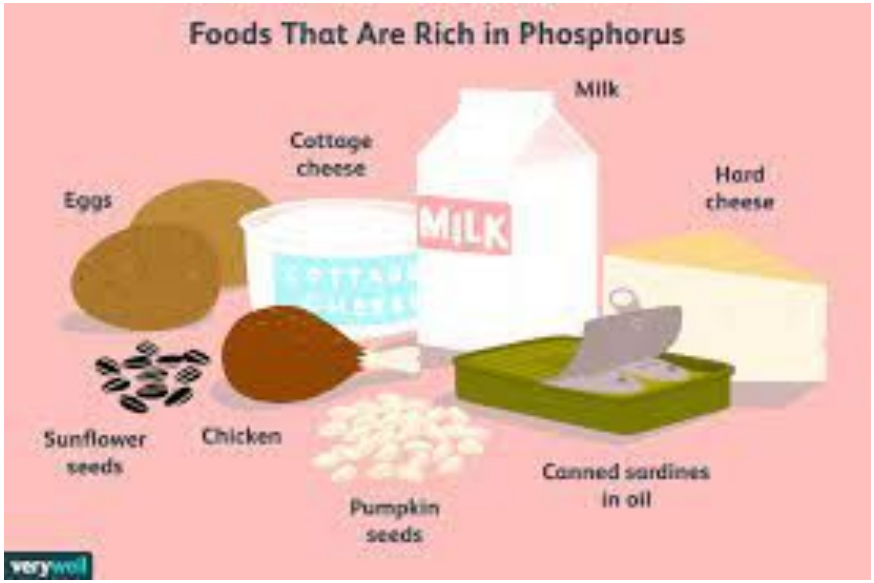
Where is sodium found?

- found in very small amounts in raw foods.
- added during processing, preparation, preservation and serving.
- Adding salt is the biggest source of sodium

Phosphorus

- Helps make **strong bones** and **teeth**.
- Helps **release energy** from food in the body.
- Makes **cell membranes**, especially in the brain.

- Phosphorus is present in **all foods**, but found richly in fruit (dried fruits, bananas, berry fruits), leafy green vegetables (e.g. broccoli and spinach) meat, nuts, seeds and pulses.



Fluoride

- Fluoride **strengthens tooth enamel** and bones.
- Protects against **dental decay**,only a small amount is required for good health
- Fluoride can be found in drinking water and in small amounts in tea and saltwater fish.

Fibre

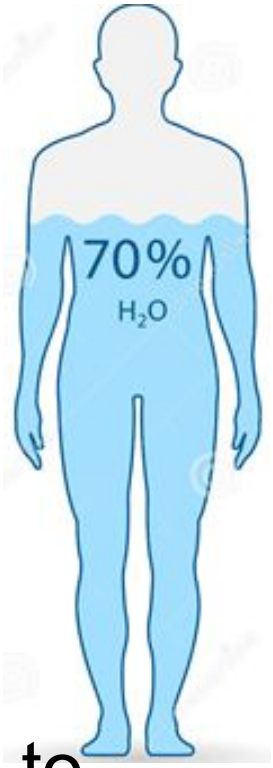
- Fibre is sometimes classified as a carbohydrate although it is not actually a nutrient. This is because it is **not absorbed by the body**.
- As fibre passes through the body it absorbs water and adds bulk to the waste making it **soft**, so avoids **constipation**.
- Fibre is also thought to slow down digestion which helps to control blood sugar levels.
- Soluble fibre dissolves in the body's water and acts to **reduce cholesterol**.
- Fibre can make you feel fuller for longer so helps in weight loss and appetite

Where is fibre found?

- oats, barley rye and bran
- fruit, such as bananas and apples
- root vegetables, such as carrots and potatoes
- wholemeal bread
- cereals
- nuts and seeds

Water in the diet

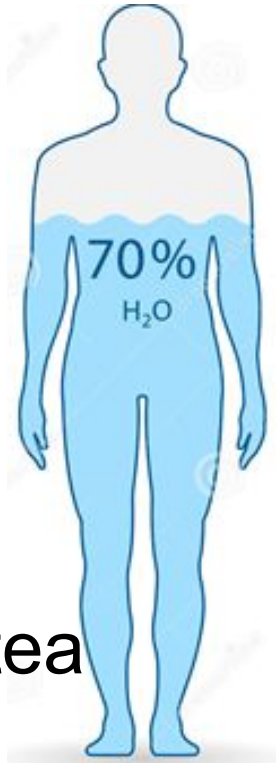
Water is the major component of body fluid and has many functions in the body:



- it acts as a **lubricant** for joints and eyes;
- it is the main component of **saliva**;
- it helps **removes waste products** from the body;
- it helps **regulate body temperature** 37(o)c

The body loses water all the time, when we go to the toilet, from sweat and also evaporation from skin. If we do not consume enough water, we become dehydrated.

Water in the diet



- Water is provided by food and drinks.

- 20% of water consumed is from food
- 80% is from drinks
- Some fluids are less beneficial, coffee and tea can increase water loss, sweetened drinks contain a lot of sugar and fizzy drinks are acidic on the teeth

Put it into practise

Plan and make a two course lunch for two people in their early twenties.

One of them has iron deficiency anaemia and has been advised by their doctor to try and eat an iron rich diet.

Explain how you will ensure that the meal is nutritionally balanced, and how you have catered for the person with anaemia.