**Wheat - Bread**

Bread is staple food in the UK. There are many varieties of bread; wholemeal, granary, white, spelt, soda and rye. They can be shaped in a variety of ways. Bread dough can be enriched with ingredients such as dried fruit, sugar, milk, butter and eggs to produce baked items like buns and pastries. Bread is a relatively low cost food, extremely versatile and relatively easy to make yourself.

**Food Science**

**Sifting the flour:** the sifting process introduces air which acts as a raising agent and helps the bread to rise in the oven.

**Adding warm liquid** Water hydrates the flour. At 37°C the liquid provides the optimum temperature for the yeast to ferment and produce the raising agent C02. Moisture is needed for a soft dough. Sugars are produced by this fermentation which the yeast consumes. As it does so it creates alcohol and carbon dioxide gas as a waste products.

**Mixing and Kneading Dough** during the mixing and kneading, two of the proteins present in the flour (gliadin and glutenin) become hydrated and when the dough is kneaded an elastic protein complex called gluten is formed. This gluten gives bread its structure and prevents it collapsing.

Proving Dough during this step some of the starch present in flour is broken down and is fermented by the yeast. C02 gas is produced which causes the gluten network to expand and therefore makes the dough rise; the quality of the gluten is important if its too weak bubbles can burst causing lack of volume, if it’s too strong the dough won’t stretch enough.

‘Knocking back’ proved dough, the dough is ‘knocked back’ to remove the large C02 bubbles produced by the yeast. This ensures a more even texture and a better rise. Large bubbles of gas would make large holes in the finished bread.

Baking, the bread dough rises as the C02 produced by fermentation of yeast expands with heat. Yeast activity increases at first, but as the temperature of the dough rises it slows down until eventually the heat will kill the yeast. The water is absorbed by the starch granules in the flour, the starch grains swell and gelatinise this supports the firm structure of the loaf. A gluten network forms a sort of skeleton which traps the C02 gas. During baking the gluten strands are stretched as the C02 gas expands, this together with the coagulation of the gluten protein results in the finished bread structure.

**Functions of Bread ingredients**

- **Yeast:** Raising agent: Is a living micro organism. When it’s the ideal conditions for growth, it respires and produces carbon dioxide. Ideal conditions for growth are: Warmth, moisture, food and time.
- **Liquid:** Moisture: it helps to create the right conditions for the yeast to grow. It also hydrates the flour, helping with gluten formation.
- **Salt:** Structure: helps with gluten formation
- **Taste:** a small amount improves the flavour of the bread.
- **Too much:** will prevent the yeast from fermenting
- **Flour:** Bulk: it gives bulk to the bread.
- **Taste:** Different types of flour affect the flavour. Absorbs moisture flour can absorb a lot of water to make a dough
- **Strong flour** has a higher protein content so will produce a good quality loaf without it collapsing
- **Nutrients** provides starchy carbohydrates, protein and is fortified with vitamins and minerals.

**Other ingredients in bread making**

- **Fat:** Lubrication- fat allows the other ingredients to slide over each other so the bread can rise.
- **Shortening** – fat coats the particles of flour and stops it absorbing water, so only a small amount should be used.
- **Taste:** Enhances the flavour.
- **Shelf Life:** fat improves the texture of the bread, keeping it moist and preventing it from going stale quickly.

**Other ingredients in bread making**

- **Sugar:** Food for the yeast: sugar provides food energy for the yeast so that they can respire and grow.
- **Browning:** sugar turns to caramel when it’s cooked and makes the crust brown.
- **Taste:** Sugar adds sweetness to the bread.
- **Ascorbic Acid:** Added mainly in the commercial manufacture of bread, it speeds up time it takes to make the bread.

**Nutritional Value of Bread:**

Bread is a good source of starchy carbohydrate, protein, B vitamins, calcium and iron. Bread which is made with wholemeal flour is also a good source of dietary fibre.

**Additional learning and challenge activities**

- What does the term ‘enriched dough’ mean?
- List the key stages for traditional bread making Describe the difference between making bread using the bulk fermentation and the Chorleywood process.
- List the four ideal conditions needed for yeast to respire and produce carbon dioxide.
- Name the gas produced by the fermentation of yeast.
- Why is the formation of the protein gluten important in bread making?
- What does the term ‘knocking back’ mean and why is it necessary?
Cereals - Wheat

Cereals describe edible grasses that are harvested for their grain. The endosperm, the germ and the bran have importance in cooking, nutrition and food science. The most popular cereals are wheat, rice, maize (corn) oats ad barley. Other cereals such as rye millet, buckwheat, quinoa, sorghum and amaranth are growing in popularity.

Food Science
Wheat flour contains 2 proteins called gliadin and glutenin. When moisture such as water or milk is added to the flour protein gluten is formed. Strong flour such as bread flour contains a higher percentage of protein than softer flours.

Some food products require more gluten development for strength and structure such as in the making of bread, also in puff, flaky and choux pastry. Softer flour should be used in cakes, batters and muffins where gluten development is to be avoided, as strong flours will result in and undesirable tougher and chewy texture.

Effect of heat:
Coagulation, in the case of a dough or cake mix heat will cause the protein present in the flour to coagulate

Gelatinisation: when starch is mixed with water it forms a suspension and with heat, the starch granules absorb moisture and swell. This thickens the mixture, resulting in a GEL.

Dextrinisation: When starch is exposed to dry heat the colour will change to brown. Dextrin causes the characteristic brown crust of baked products and toast.

Key points: Starch is found in the endosperm
Wholegrain cereals have a higher nutritional value than processed cereals
Wholegrain cereal is grain left in its natural state.
The endosperm from wheat provides starch and protein.
Dietary fibre is found in wheat bran.
Milling wheat grain into flour is an example of primary processing.
Secondary processing of wheat is the making of food products using the flour such as biscuits, sauce, pasta and cakes.
By law, the nutrients calcium, iron and the B vitamins (niacin and thiamin) must be added to flour, this is known as fortification.
Wholemeal flour is made from the whole wheat grain, nothing is removed.
White flour has most of the bran and wheat germ removed.
Wheat provides energy in the form of starch
Wheat bran provides dietary fibre and is a source of B vitamins.
The more you knead dough or beat a mix with wheat flour the more gluten will be formed. Ok for bread, not for shortcrust pastry, cakes or shortbread biscuits.
Extraction rate: How much of the original wheat grain is in the flour. 100% means that it is all the grain.
NSP: (non starch polysaccharide) indigestible carbohydrates found in plat food, often called dietary fibre.
Phytic acid: A form of phosphorus which limits absorption of calcium and iron in the body. Wheat stores the mineral phytic acid, it’s present in the bran of the grain. The acid will bind with both calcium and iron to form phytates and this then limits the absorption of these minerals in the body.
Staple Foods: Staple foods are usually starchy foods that grow well and can be stored for consumption throughout the year.

Types of flour produced from wheat:
* Wholegrain
* Brown
* White
* Granary
* Stoneground
* Organic

Nutritional Value of Wheat:
Wheat is a good source of starchy carbohydrate, found in the endosperm. It is also a good source of protein and provides a range of vitamins and minerals. If the wheat still has the bran it will provide dietary fibre in the form of (NSP). B vitamins are found in the bran layers. Flour sold in the UK is fortified with calcium, iron and B vitamins.

Processed wheat grain products:
Wheat Bran: Added to biscuits, cakes, muffins to increase dietary fibre.
Puffed wheat: Flaked, puffed and extruded wheat is used to manufacture breakfast cereals.
Semolina: Mainly used for making pasta.
Couscous: made from semolina grains
Burghul: Also known and bulgur or cracked wheat, key ingredient in tabouli and kibbeh, can be used in soups, burgers and casseroles.

Additional learning and challenge activities
• Ensure you are able to explain the difference between primary and secondary processing
• What does the term ‘extraction’ rate of flour mean?
• Can you explain the nutritional differences between a food product made with wholemeal flour and one made with white flour?
• You need to know the key nutrients provided in cereals.
• Make sure you can explain how the nutritional value can be affected when cereal is processed.
• Can you discuss the health benefits of a diet containing whole grain cereals?
GCSE Food Preparation & Nutrition – Unit 1 Food Commodities

**Pasta**

Pasta is a staple food of Italy and together with bread, rice and potatoes, it forms part of the staple food range in the UK. Pasta is usually bought fresh or dried and is available in a variety of shapes, flavours and colours. It can be filled or unfilled and can be served with a variety of sauces. Pasta is a **convenience food** and it is quick to cook, it requires little skill and is cost effective.

Pasta is made from durum wheat; durum wheat has a higher protein content than other wheat varieties. It produces a grainy, yellow coloured semolina on milling. Durum wheat makes good quality pasta because it requires less water to make the dough, making it easier to dry the pasta. Gluten free pasta is available and you can make your own by adding xanthan gum into gluten free flour.

**Key terms**

- **Convenience food** – where some or all the preparation has been done in advance.
- **Durum wheat** – high protein wheat used to make pasta.
- **Laminating** – rolling out pasta into thin sheets.
- **Dies** – machinery attachments used to make special pasta shapes that cannot be made by hand.
- **Extruded** – pasta is forced through a die to achieve a special pasta shape, eg spaghetti and macaroni.

**Food Science**

**Xanthan gum** can be used in a gluten free pasta recipe to help give the pasta its elasticity so it can be rolled through the pasta machine and give it its stability. Xanthan gum is a polysaccharide with a wide variety of uses, including as a common food additive. It is a powerful thickening agent, and also has uses as a stabilizer to prevent ingredients from separating.

Rice flour and potato flour can be used for gluten free recipes. **Dehydrating** pasta is possible rather than air drying to ensure complete moisture removal to preserve the pasta.

Various ingredients can be added for colour which add to the pasta’s **nutritional content**.

- **Al dente**: ‘To the tooth’ – usually used to describe when pasta is perfectly cooked, with a little ‘bite’ in the middle.
- **Starch**, should be removed from the pasta by cooking in boiling salted water, this prevents the pasta from being too sticky.

**Nutritional Value of Pasta:**

Pasta is a good source of starchy carbohydrate, protein and B vitamins. Whole wheat pasta also provides dietary fibre. Pasta is not suitable for a coeliac as it contains wheat flour.

**Storage**

- Dried pasta can be stored in a cool, dry cupboard and has a long shelf life. Fresh pasta should be kept chilled. Packing should be clearly labelled with details of ‘best before’ or ‘use by’ dates and storage instructions.

**Additional learning and challenge activities**

- Investigate how to make gluten free pasta
- How could xanthan gum help create a gluten free pasta dough?
- Create a page investigating the various types of pasta, their names and what they look like.

**Colouring Pasta:**

- Spinach: Verdi – Green
- Tomato puree: Pomodori - Red
- Beetroot: Barbabietola rossa – Purple
- Squid ink: Nero - Black
Cereals

Barley is the second most widely grown crop in the UK after wheat. The most common product is pearl barley. It is also used in beer making. It can be used in sweet & savoury dishes and also bulks out soups & casseroles. Barley is a good source of starchy carbohydrate, iron & vitamin B3.

Oats are a good source of starchy carbohydrate, protein and fat. They are high in fibre. Pure oats do not contain gluten, however a lot of supermarket oats are not pure.

Oats are grown in cold climates, such as Scotland. They are rolled rather than crushed and are partially cooked during this process. Oats can be processed further to make them cook more quickly.

Maize (corn) has a similar nutrient content to other cereals and is a good source of starchy carbohydrate. Yellow varieties of corn also contain carotene, which is converted to Vitamin A in the body.

Rye is mainly grown in Northern Europe. It is hardy and likes cold, wet climates. Rye bread has a close, dense texture and is often combined with wheat flour so it is not too dense and sticky. Rye flour has a longer shelf life than wheat flour due to its higher gliadin protein content. It can also be used to make alcoholic drinks, such as whiskey & beer. It is a good source of starchy carbohydrate, fibre, minerals and vitamin B1 (thiamin).

Other grains:
- Sorghum; cereal grain grown in Asia & Africa. Milled into a soft, fine flour to make flat breads and has a nutty taste.
- Quinoa; pronounced ‘keen- wah’, is often called a superfood. It is a good source of protein—providing all the essential amino acids and is a HBV protein. It is gluten free, cholesterol free and also wholegrain so has plenty of fibre too. There are red, black and white quinoa and they are cooked similar to rice/barley.
- Arrowroot; comes from the maranta plant and is used to thicken sauces. Can also be used as a glaze for fruits in the form of a smooth, clear gel.
- Sago; comes from sago palm and is used for milky puddings.
- Tapioca; comes from a tuber called cassava and is also used for milky puddings as well as a thickener in soups & stews.

Key words
- Humid: damp, warm environment. Not a good environment for cereals to be stored in; they need to be cool & dry.
- Best before date: When cereals should be consumed by.
- Maize: sometimes called corn. Staple food grown in South America, Asia & Africa.
- Masa harina: finely ground corn flour treated with slaked lime; main ingredient in corn tortillas.
- Beta- glucan: found in oats; lowers blood cholesterol.
- Coeliac disease: an auto immune condition where a person has an adverse reaction to gluten.

Additional learning and challenge activities
- Do a poll to find out which breakfast cereals your class mates eat; which are the most popular? Why do you think this is? Discuss the advantages & disadvantages of the most popular cereals; are they healthy?
- Research the name of the deficiency disease caused by lack of niacin (vitamin B3) where maize (corn) is used as a staple food.
- Can you explain the difference between soluble and insoluble fibre?
- Get a map of the world and colour code where each crop is grown/ produced.
- Research into the most likely contaminants that can affect the quality of the cereal crops and how they can be prevented.
- Create a dish using one of the cereals listed on this page!
Rice is the most widely consumed staple food for a large part of the world's human population, especially in Asia. Rice grows well in hot and humid conditions in flooded fields called paddies. Rice is processed in a similar way to wheat. It is cost effective and versatile, it has a long shelf life as it's a dried food. Storage should be in a cool dry area (usually in a kitchen cupboard).

**Growing and processing:**
Many different types of rice are grown and used in cooking. In order to grow rice the land is firstly ploughed to 'till' or dig up, mix and level the soil. In most Asian countries the ancestral methods for cultivating and harvesting are still practised. The fields are often ploughed using water buffalo. Rice seedlings are planted by hand in the fields which have been flooded by rain or river water.

**Key terms**
Brown rice contains bran. White rice has the bran removed.
Cooked long grain rice should be fluffy and individual grains will be visible.
Cooked short grain rice will be stickier and starchier.
Rice can be made into many different products including wine, vinegar, milk and noodles.
Beri Beri a muscle wasting disease occurring in places where white rice is a staple food. The diet is deficient in thiamine (vitamin B1).

**Secondary Processing of rice:**
This is when rice is processed into other products such as:
- Rice bran, rice bran oil, rice milk, rice vinegar, rice flour, rice wine, rice cakes, rice noodles, rice starch, rice tea and rice wine.

**Nutritional Value of Rice**
Rice is about 90% carbohydrate. 8% protein and 2% fat. It is a good source of iron and B vitamins. It is low in fibre.
Brown Rice is wholegrain. It is about 85% carbohydrate, 8% protein and 7% fat. And contains as much as four times the amount of fibre and more minerals than white rice. It is a good sources of B vitamins.

**Types of Rice**

**Long grain:**
- Brown long grain rice (whole grain rice) – nutty flavour, nutritionally complete, higher vitamin, fibre and mineral content. Chewy texture and takes longer to cook.
- White long grain rice – cooks quickly and is white in colour
- Basmati rice – fragrant flavour, can be white or brown. The preferred rice for Indian cuisine.
- Jasmine Rice (Thai fragrant rice) – Aromatic like Thai food, soft and sticky texture when cooked.
- Wild rice – An aquatic wild grass. Takes a long time to cook, nutty flavour, nice texture and dark in colour. Usually sold as a mixture of rice.

**Short Grain Rice:**
- Arborio Rice – an Italian variety which is used to make risotto
- Pudding Rice
- Glutinous rice – when cooked properly this rice is very sticky, used in various Asian cuisine.
- Sushi Rice – higher ratio of the starch amylopectin compared to the starch amyllose. This makes this rice much stickier when cooked.

**Why is rice associated with food poisoning? What are rice spores?**

**Additional learning and challenge activities**
- Give 5 examples of products obtained from secondary processing of rice.
- For each one suggest one way that it can be used in cooking.
- Ensure you know the various rice varieties and dishes that can be made using these types of rice.
- What is the difference between white and brown rice?
Potatoes: A staple food in the UK. The part of the potato we eat is called the Tuber. They come in a variety of colours but we are most familiar with the red and white varieties. The most common potatoes we eat in the UK are Maris Piper, King Edwards and Desiree. Sweet potatoes are also popular and are a common alternative to traditional potatoes. Different varieties of potatoes have different textures. Some can be floury, sticky and waxy or granular. This is due to the potato cell changing during cooking. All potatoes have the same structure. The outer layer is the skin, the flesh is the area under the skin. The pith is the watery core. They can be cooked in a variety of ways including, boiling, roasting, baking and frying. Good source of vitamin C, complex carbohydrates (starch) and a small amount of B vitamins. They also contain water.

Storage of potatoes
Stored in cool, dry and dark places
Such as hessian bags, racks or paper bags
Left in the light they will turn green - the green part is toxic
Not in plastic bags as they will sweat and rot
Storing in the fridge can affect the taste and cause discolouration

We are encouraged to eat a wide variety. Eaten as part of a main meal or a snack. Can be eaten raw. Cooking destroys some of the nutritional value. The eatwell guide suggests a third of our diet is made up of fruits and vegetables. They are a good source of carbohydrates, fibre vitamins and minerals and are low fat.

Fruit
There is a vast array of fruits available to eat in the UK. These may be home grown or imported. Many fruits are seasonal (the times of the year when the food is at its peak, in terms of harvest, flavour or cost).

There are four main groups of fruit. Some fruits (bananas, pineapple, mango) do not fit into any of the categories and tend to be sold as exotic or tropical fruits.

<table>
<thead>
<tr>
<th>Group</th>
<th>Examples</th>
<th>Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Citrus</td>
<td>Oranges, lemons, limes, grapefruits</td>
<td>Cool, dry place</td>
</tr>
<tr>
<td>Hard</td>
<td>Apples, pears</td>
<td>Room temperature, do not refrigerate</td>
</tr>
<tr>
<td>Soft or Berry</td>
<td>Strawberries, raspberries, blackberries</td>
<td>Fridge</td>
</tr>
<tr>
<td>Stone</td>
<td>Plums, cherries, peaches</td>
<td>Fridge. Room temperature for faster rippening.</td>
</tr>
</tbody>
</table>

Vegetables are categorised according to the part of the plant they represent. They can be grown above or below the ground.

<table>
<thead>
<tr>
<th>Group</th>
<th>Examples</th>
<th>Above or below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roots</td>
<td>Beetroot, Carrots, swede</td>
<td>Below</td>
</tr>
<tr>
<td>Bulbs</td>
<td>Onions, leeks, spring onions</td>
<td>Below</td>
</tr>
<tr>
<td>Tubers</td>
<td>Potatoes, sweet potatoes, yams</td>
<td>Below</td>
</tr>
<tr>
<td>Stems</td>
<td>Asparagus, celery</td>
<td>Above</td>
</tr>
<tr>
<td>Leaves</td>
<td>Cabbage, brussel sprouts</td>
<td>Above</td>
</tr>
<tr>
<td>Flowers</td>
<td>Cauliflower, broccoli</td>
<td>Above</td>
</tr>
<tr>
<td>Fungi</td>
<td>mushrooms</td>
<td>Above</td>
</tr>
</tbody>
</table>

Vegetable Structure
The structure of vegetables is a collection of cells made of cellulose. The type of vegetable and its age can mean that the structure varies. Vegetable cells contain high amounts of water and this keeps the vegetable form (e.g. cucumber 70% water). If they start to lose water the cells lose their firmness and they become limp and flabby.

Vegetable Storage
Salad and some green vegetables can be stored in the fridge to keep them fresh. Most other vegetables should be stored in cool, dry, well ventilated areas. Most vegetables should be eaten as soon as they are purchased to avoid nutrient and flavour loses.

Ripened fruits are more attractive to eat. They will change in colour, texture and taste (sweeter) when they ripen.
Milk, Cheese and Yoghurt

**Milk**

Cow's milk is the dominant milk drank in the UK. Alternative include goats milk and soya milk.

Milk contains bacteria - it must be heated to destroy the bacteria - to make it safe to drink. This makes it last longer too. Milk can be pasteurised. HTST - High temperature short time. Heated to 72 degrees for 15 seconds. Then cooled rapidly and bottled. UHT - ultra heat treatment - heated for 1 second to 132 degrees. Makes milk sterile (no bacteria). Rapidly cooled and packaged. Lasts longer than pasteurised milk.

<table>
<thead>
<tr>
<th>Type</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole</td>
<td>3.9 % full fat. Blue cap. Recommended for children</td>
</tr>
<tr>
<td>Semi-skimmed</td>
<td>1.7% fat. Half fat. Green cap</td>
</tr>
<tr>
<td>skimmed</td>
<td>0.1-0.3% fat. Red cap</td>
</tr>
<tr>
<td>Evaporated</td>
<td>Concentrated, sterilised and canned. Reduced liquid content - thicker</td>
</tr>
<tr>
<td>Condensed</td>
<td>As condensed but with sugar added - helps to preserve the milk</td>
</tr>
<tr>
<td>Dried milk powder</td>
<td>Water removed to dry. Water added then can be used and stored as fresh milk</td>
</tr>
<tr>
<td>Alternative</td>
<td>Dairy free - soya, almond, oat and rice</td>
</tr>
</tbody>
</table>

Complete food - provides many nutrients - the only food needed for babies (all mammals) for the first few weeks of life.

**Protein** - HBV

**Fat** - Saturated. High content depending on milk used

**Minerals** - calcium, phosphorus, sodium

**Vitamins** - A, D and B some C

**Storage**

Perishable - refrigerated and away from strong smelling foods.

---

**Cheese**

Cheese can be described as solid or semi-solid (soft cheese) milk. Can be referred to as fermented dairy food.

<table>
<thead>
<tr>
<th>Type</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard pressed</td>
<td>Cheddar, leicester</td>
</tr>
<tr>
<td>Soft (or ripened)</td>
<td>Camembert, brie, goats</td>
</tr>
<tr>
<td>unrippeded</td>
<td>Cottage cheese, cream cheese, mascarpone</td>
</tr>
<tr>
<td>Blue veined</td>
<td>Stilton, danish blue</td>
</tr>
<tr>
<td>processed</td>
<td>cheese slices and spreads</td>
</tr>
</tbody>
</table>

**Protein** - HBV

**Fat** - Saturated. High content depending on milk used

**Minerals** - calcium, phosphorus, sodium

**Vitamins** - A, D and B some C

**Uses**: flavour, colour, texture and increased nutritional value

**Storage**

Refrigerate between 0-5 degrees. Soft cheese use within a few days. Hard cheese last longer. Airtight box - prevents drying out

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**Yoghurt**

The bacteria convert the lactose (milk sugar) to lactic acid, which thickens the milk and gives it the tangy taste characteristic of yogurt. The yogurt is then cooled and can be flavoured with fruit, sugar, other sweeteners or flavourings. Stabilizers, such as gelatin, may also be added

Yoghurt is made from different types of milk. Some yoghurts contain other ingredients to flavour them such as sugar and fruit.

Set yoghurt - firm texture - set in pot it is served in

Love yoghurt - fermented with live culture bacteria - still living

Greek (strained) yoghurt - cows or ewes milk - thick and high in fat

**Storage**

Refrigerate between 0-5 degrees. Eat within use by date.
Milk, Cheese and Yoghurt

MEAT

There are 3 animals we generally eat in the uK - pigs, sheep and cows.

Meat is made up of protein, water and fat. Fat in meat is either visible (seen around the edge) or invisible (in the connective tissue).

<table>
<thead>
<tr>
<th>Type</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef, veal</td>
<td>Steaks - sirloin, fillet, rump</td>
</tr>
<tr>
<td></td>
<td>Joints - topside, brisket, silverside</td>
</tr>
<tr>
<td></td>
<td>Cuts - skirt, chuck, minced</td>
</tr>
<tr>
<td>Lamb, mutton</td>
<td>Steaks - shoulder, fillet, neck</td>
</tr>
<tr>
<td></td>
<td>Joints - leg, saddle, noisettes, minced</td>
</tr>
<tr>
<td>Pork, bacon, gammon and ham</td>
<td>Steaks - shoulder, loin</td>
</tr>
<tr>
<td></td>
<td>Joints - spare rib, leg, shoulder, loin</td>
</tr>
<tr>
<td></td>
<td>Cuts - belly, chops</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>White fish</td>
<td>Sole, halibut, trout, tuna</td>
</tr>
<tr>
<td>oily</td>
<td>Mackerel, salmon, trout</td>
</tr>
<tr>
<td>shellfish</td>
<td>Crabs, lobster, prawns</td>
</tr>
</tbody>
</table>

Protein - HBV
Fat - Saturated
Minerals - iron
Vitamins - (fat soluble) A, D and B
Water - high volume content.

Cooked for: kill bacteria, flavour, to make tender, to make more appealing, to make nutrients more digestible

Storage
Meat is a high risk food, it must be cooked and stored correctly to avoid food poisoning. Raw meat should be refrigerated, cooked meat covered and refrigerated

Fish is made up of protein, water, minerals and fat.

Fish Flesh = muscle + connective tissue.
Fish muscle has short fibres and the connective tissue is very thin, this means that fish can be cooked quickly and still be tender and moist.
Cuts - whole, fillet, goujons, steaks

Raw meat = muscle + connective tissue + fat.

The muscles are bundles of fibre which are surround and held together with connective tissue. These muscle fibres can be different lengths depending on the part of the animal they are from. part of the animal that does a lot of work such as the leg have longer fibres and can be tougher. Cooking is used to make the meat tender. The fibres contain water and mineral salts.

Fish

Digestible - some foods are broken down more easily by the body (by the action of enzymes) than others. Meat needs to be cooked to make it more digestible. They are broken down into macronutrients and micronutrients and absorbed through the wall of the intestines.
# Milk, Cheese and Yoghurt

**EGGS**

Eggs are produced by hens, ducks, quails and geese. The most popular are hen (chicken) eggs.

Eggs can be brought in 4 different sizes; small, medium, large and extra large.

### Structure:
- 10% shell, 30% yolk, 60% white

### Storage
Away from strong smelling foods as they are porous (contains tiny holes) and will absorb strong odours. Consume by use by date.

### Nutritional Information

**Eggs**
- Cholesterol: 184 mg
- Protein: 2.5 g
- Carbohydrates: 0.5 g

**Yolk**
- Fat: 4.5 g
- Sat. Fat: 1.6 g
- Cholesterol: 184 mg
- Protein: 2.5 g

**White**
- Fat: 0 g
- Sat. Fat: 0 g
- Cholesterol: 0 mg
- Protein: 4 g

**Cooked by:** boiling, frying, poaching, scrambling

---

## Poultry

Chicken is the most popular poultry used in the UK. There is also duck, turkey, goose, guinea fowl and pigeon.

<table>
<thead>
<tr>
<th>Poultry</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicken</td>
<td>Most popular, large bird, sold whole or jointed into legs, wings, breast and legs.</td>
</tr>
<tr>
<td>Turkey</td>
<td>Similar to chicken but larger. Associated with Christmas</td>
</tr>
<tr>
<td>Duck and Goose</td>
<td>Richer tasting birds, fatty in comparison</td>
</tr>
</tbody>
</table>

### Poultry = Muscle + Connective Tissue

Breast is softer than the legs that can be tough (hardest working part of the bird). Older birds are tougher than younger birds which tend to be tender. Nutritional value varies according to the age of the bird, how it is reared and the parts eaten.

High in Protein - HBV
Lower in Fat than meat, saturated
Minerals - calcium if bones are eaten - sardines
Vitamins - good source of B, some A and D

### Storage
High risk food, it must be cooked and stored correctly to avoid food poisoning. Should be refrigerated, thawed and cooked thoroughly to kill bacteria.
**Soya and Tofu**

- Soya comes from the soya bean pod. Part of the legume family. Beans, peas and lentils are also part of this family.
- Soya can be processed into many different forms - milk, sauce, paste, flour tempeh. It can be bought dried, canned or fresh in the form of desserts, yoghurts and margarines. Contains Fibre, HBV protein and magnesium.

Tofu can be called bean curd. Made from fresh soya milk, that has been curdled and pressed into a block and then cooled.

- It is made in the same way as traditional cheese.
- Bland tasting so needs to be favoured.

Contains HBV protein, iron, calcium and other minerals. Some B vitamins.

- They are both bought in sealed containers and should be stored in the fridge.

**Beans**

- Beans are legumes, normally referred to as pulses. Pulses are edible seeds that grow in a pod.
- Most popular bean is the baked bean - a haricot bean in tomato sauce. Beans are added to dishes for bulk, flavour or to add to the nutritional value.

High in protein and fibre, some carbohydrates, calcium and B vitamins.

<table>
<thead>
<tr>
<th>bean</th>
<th>storage</th>
</tr>
</thead>
<tbody>
<tr>
<td>fresh</td>
<td>fridge</td>
</tr>
<tr>
<td>frozen</td>
<td>freezer</td>
</tr>
<tr>
<td>dried</td>
<td>Airtight, cool dry place</td>
</tr>
<tr>
<td>canned</td>
<td>cool dry place</td>
</tr>
</tbody>
</table>

**Nuts**

- Some nuts are edible kernels from which the fruit wall has been removed. Some are seeds and some are pulses.
- Nuts are used in savoury and sweet dishes
- Nuts can cause allergic reactions
- Nuts can be bought in many forms, shelled, ground, chopped, whole
- Nuts have high energy values due to the high fat content
- They provide LBV protein
- They contain B vitamins
- They provide fibre
- Need to be stored in airtight containers or will turn rancid due to the high levels of oil
- Kept away from moisture and strong odours
- Consume before use by date.

**Seeds**

- Include poppy, pumpkin and sunflower
- Used as a healthy snack
- Used as topping on food
- Roasted or toasted to add texture and flavour
- Ground to add flavour
- Used to manufacture oil
- Provide protein
- Provide essential fatty acids
- Provide iron and zinc
- Vitamins B and E
- Need to be stored in air tight containers in a cool dry place.
**Butters**

*Butter* is the dairy product made from churning milk or cream. The churning process separates the butterfat (the solids) from the buttermilk (the liquid). The butter we most often buy is made from cow's milk, although other varieties — made from the milk of sheep, goat, yak, or buffalo — are also available. Butter comes in salted and unsalted varieties.

**Uses:**
- Melting - pouring over vegetables
- Spreading - crackers and sandwiches to avoid moisture
- Creaming - making cakes
- Shallowing frying - eggs
- Shortening - rubbing in to make pastry

**Nutrients:**
- High in fat
- Vitamins A and D
- Sodium - salt

**Storage:**
- Kept in fridge
- Away from strong odours
- Fully covered or can go rancid if left open to the air.

**Sugars**

- Comes from sugar cane (a tall grass grown in hot climates) or sugar beet (a root crop similar to parsnip grown in climates with warm and cold seasons)
- Pure carbohydrate - give quick release energy. Provides empty calories as does not provide other nutrients
- Primary function in cooking is to provide sweetness. Can provide colour and crunch to some dishes

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>granulated</td>
<td>White, coarse, small crystals</td>
<td>Sweetening- drinks, cereals,</td>
</tr>
<tr>
<td>caster</td>
<td>White, made from ground granulated sugar, finer crystals</td>
<td>Cake making - victoria sandwich cake</td>
</tr>
<tr>
<td>icing</td>
<td>White, made from ground granulated sugar, fine powder</td>
<td>Decorating - cakes, making icing</td>
</tr>
<tr>
<td>demerara</td>
<td>Pale brown, made from raw sugar, larger coarse crystals than granulated sugar</td>
<td>Adding crunch - flapjacks</td>
</tr>
<tr>
<td>Soft brown</td>
<td>Small sugar crystals containing molasses, a dark syrup</td>
<td>Flavour in cakes - christmas cake</td>
</tr>
</tbody>
</table>

**Golden syrup** or light treacle is a thick, amber-coloured form of inverted sugar syrup made in the process of refining sugar cane or sugar beet juice into sugar, or by treatment of a sugar solution with acid. It is essentially white sugar/sucrose in a different form. This has been inverted, meaning that the sucrose has been broken down into two simpler sugars, fructose and glucose. The fructose content gives a heightened perception of sweetness so that, 25% less golden syrup can be used than granulated white sugar.

A British tablespoon of golden syrup contains about 60 calories, whereas a British tablespoon of white sugar is about 50 calories. By volume, golden syrup has more calories: by weight sugar has more calories. Golden syrup and white sugar have a very similar glycaemic value, meaning that the body processes both at about the same rate.

**Margarine**

Margarine was introduced as an inexpensive alternative to butter. It was made from vegetable oils and is fortified with vitamins A and D. Margarine is sold in solid block or as a soft margarine in a tub.

**Uses:**
- Block margarine is used for baking. Soft margarine is used for baking and frying and for spreading when making sandwiches.
- Some soft margarines have a very low fat content so no suitable for making cakes, pastries and biscuits. High in fat. Provide vitamins A and D, water and minerals such as sodium (salt).

**Oils**

Vegetable oils are natural oils found in seeds, nuts and fruit. Examples include sunflower oil, sesame oil, rapeseed oil and olive oil. Oils are used for frying, basting, marinating and dressings. The main nutrient found in oils is fat, this is an unsaturated fat and considered healthier than saturated fats. Oils should be stored in cool, dry places.

**Syrups**

Golden syrup is the most familiar
Bought in various forms - jar - can - squeezy bottle. Very sweet.
Black treacle is also a syrup, much darker in colour and thicker with a stronger flavour.
Black treacle is used for making christmas cake, gingerbread and some curry sauces.
Best stored in cool, dry places and used within three months of opening.
**Food Preparation and Nutrition Topic: Section 2: Principles of Nutrition**

### Macronutrients

Macronutrients are needed in **large amounts** to make the body function properly.

#### Protein

These are made up of **essential amino–acids** and **non-essential amino–acids**. (Our bodies can make non-essential amino acids, but we need to get essential amino acids from our food).

- **Source**
  - HBV – these have all the essential amino acids
  - Meat, fish, dairy, eggs (animal sources)
  - Tofu
  - LBV – these are missing at least one essential amino acid
  - Seeds, nuts, beans, pulses, cereals, Quorn (plant sources)

- **Function**
  - Growth
  - Repair
  - Maintenance

- **Dietary Reference Values**

<table>
<thead>
<tr>
<th>Age</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>15g</td>
</tr>
<tr>
<td>4-6</td>
<td>20g</td>
</tr>
<tr>
<td>7-10</td>
<td>28g</td>
</tr>
<tr>
<td>11-14</td>
<td>42g</td>
</tr>
<tr>
<td>15-18</td>
<td>55g</td>
</tr>
<tr>
<td>19-50</td>
<td>55g</td>
</tr>
<tr>
<td>50+</td>
<td>53g</td>
</tr>
</tbody>
</table>

- **Complementary actions**
  - Combining 2 or more LBV proteins helps get a balance of essential amino acids. e.g. beans on toast.

#### Fats, oils and lipids

Too much fat is bad for you, but so is not enough.

- **Source**
  - Saturated Fats (From Animal sources. They are also called unhealthy fats. They are generally solid at room temperature)
    - Sausages / Bacon / Lard / Dairy
  - Unsaturated Fats (These are healthier. They are often liquid at room temperature.)
    - Monounsaturated fats – olive oil / avocados
    - Polyunsaturated fats – sunflower oil / seeds

- **Function**
  - Energy
  - Warmth
  - Protection of organs
  - Source of fat soluble vitamins
  - Hormone production

- **Dietary advice**
  - Reduce the amount of sugar that we eat, no more than 5% of our diet.
  - Complex Carbohydrates should make up half of the energy we eat.
  - Wholegrain cereals are a good source of fibre

#### Carbohydrates

There are 2 kinds, simple or complex.

- **Source**
  - Simple - these are sugars (monosaccharides, disaccharides)
    - Cakes, jam, soft drinks
  - Complex - these are starches (polysaccharides)
    - Bread, potatoes

- **Function**
  - Simple
  - Quick burst of energy
  - Complex
  - Longer lasting energy

- **Dietary advice**
  - Can make blood sugar level drop
  - Hunger,
  - Dizziness,
  - Tiredness
  - Lack of energy
  - Our body will use protein for energy (leads to loss of muscle)
  - Excess is turned into fat
  - Can cause obesity
  - Too much sugar leads to dental problems
  - Can lead to type 2 diabetes
**Vitamins**
They all have different functions, but generally
- Help the body release energy
- Prevent some diseases
- Keep the body healthy
- Repair cells

**Micronutrients**
Micronutrients are needed in small amounts to make the body function properly.

**Fat soluble vitamins:** vitamin A, and vitamin D
- Don’t need to be eaten every day as the body can store them in the liver and fatty tissues.
- Too many in our diet can cause us harm

**Water soluble vitamins:** vitamin C
- Not stored in the body so need to be eaten
- To maximise the intake and prevent loss, steam instead of boil the food, or use the water in gravy
- Excess vitamins are eliminated in the urine

**Minerals**
Minerals help chemical reactions in our body.

<table>
<thead>
<tr>
<th>Source</th>
<th>Function</th>
<th>Deficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Calcium</strong></td>
<td>Dairy, green leafy veg, bread</td>
<td>Strong bones</td>
</tr>
<tr>
<td><strong>Iron</strong></td>
<td>Meat, green leafy veg</td>
<td>Red blood cells</td>
</tr>
<tr>
<td><strong>Potassium</strong></td>
<td>Fruit and veg</td>
<td>Heart health</td>
</tr>
<tr>
<td><strong>Magnesium</strong></td>
<td>Green leafy veg</td>
<td>Release energy and bone health</td>
</tr>
</tbody>
</table>

**Trace Elements**
Trace elements help chemical reactions in our body.

<table>
<thead>
<tr>
<th>Source</th>
<th>Function</th>
<th>Deficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fluoride</td>
<td>Fish, toothpaste</td>
<td>Strengthens teeth</td>
</tr>
<tr>
<td>Iodine</td>
<td>Seafood and dairy</td>
<td>Hormone development</td>
</tr>
</tbody>
</table>

**Fibre**
Fibre is also known as “roughage” or “non-soluble polysaccharides (NSP)”.

**Insoluble fibre**
Source: Wholegrain, whole wheat and wholemeal cereals
Function:
- Insoluble fibre goes through the body and collects rubbish and waste before pushing it out as poo.
- This acts like a sponge by expanding to hold water and waste
- Helps keep poo soft
- Prevents constipation

**Soluble Fibre**
Source: Peas, beans, lentils, apples and citrus fruit
Function:
- Lowers cholesterol, helping reduce the risk of heart disease.
- Helps to control the level of blood sugar by slowing down the release of food from the stomach (good for diabetics)

**Water**
Keeps us hydrated.
Source: Drinks, fruit and vegetables, soup.

**Function**
- Normal physical and cognitive functions,
- Normal regulation of the body’s temperature,
- Gets rid of waste substances in the body.

**Deficiency**
- Even mild dehydration can lead to headaches, irritability and loss of concentration.
- Groups at risk include children, old people and active people.

**Deficiency**
Constipation, bowel cancer

**RDA**
30g per day
We use the eatwell guide to get a balance of healthier and more sustainable food. It shows how much we should eat from each group.

1. **Base your meals on starchy food**
   Most of the food on your plate should consist of starchy foods. These supply important energy and give important minerals and dietary fibre.
   Whole grain and whole wheat versions are best.
   How?
   Have a side of starchy food like potato, rice, pasta or bread.

2. **Eat lots of fruit and veg**
   We should eat at least five a day.
   How?
   Choose from fresh, frozen, tinned, dried or juiced. Add vegetables to meals. Add vegetables or fruit to cakes and desserts.

3. **Eat more fish**
   Fish is a good source of protein, contains vitamins, minerals and omega 3.
   How?
   Aim for at least two portions of fish a week.

4. **Eat less saturated fat and sugar**
   Too much fat is bad for you and causes dietary health problems (diabetes, heart disease, obesity, stroke).
   How?
   • Cut visible fat from the meat
   • Choose lean cuts of meat
   • Offer low fat spreads
   Too much sugar caused type 2 diabetes, heart disease, obesity and dental problems (heart issues).
   How?
   • Use sugar substitutes for puddings, cakes and biscuits
   • Offer fresh fruit alternatives
   • Use less processed foods – especially sauces

5. **Eat less salt**
   Eat no more than 5g a day.
   Too much salt causes high blood pressure, strokes and dehydration.
   It is highly addictive!
   How?
   • Cook dishes using fresh ingredients
   • Don’t add salt at the table
   • Don’t add salt to the cooking water

6. **Get active**
   If you eat more energy than your body needs, it is turned into fat. If you don’t eat enough energy your body cannot function properly.
   Being overweight can lead to heart disease, high blood pressure or diabetes.
   Being underweight also affects your health and leads to bulimia or anorexia.
   How?
   • Only eat as much food as you need
   • Exercise for 30 minutes a few times a week.

7. **Drink plenty of water**
   Our bodies are 2/3s water. It is vital to drink enough water to stay hydrated.
   Even mild dehydration can lead to headaches, irritability and loss of concentration.
   How?
   • Drink loads of water
   • Fruit, soup and other drinks also count

8. **Eat breakfast**
   Breakfast is the most important meal of the day as it gives energy for the day.
   It should be made up of complex carbohydrates for a slow release of energy and stop us snacking.

We also follow the 8 government healthy eating guidelines:
**Section 3: Diet and good health: Nutritional Needs**

### Life Stages

**Toddlers**
- Eatwell guide doesn’t apply
- High calcium
- Small meals
- Variety of different foods

**Young Children**
- Protein for growth and development
- Given small, attractive portions of food
- Introduce to new foods gradually
- Avoid fatty and sugary food
- Calcium and Vit. D for bones and teeth

**Teenagers**
- Should be given protein for growth and development
- Risk of obesity and poor skin - Eat 5-a-day to help
- Good supply of iron (esp. for girls during period)
- Avoid fatty or sugary food
- Try to develop good habits

**Early and middle Adulthood**
- Follow eatwell guide
- Men need more calories
- Women need more iron
- Calcium and vitamin for strong bones

**Elderly**
- Should be given protein to repair worn out body cells
- Need a good supply of calcium and vitamin D for healthy bones
- Good supply of iron to keep the body healthy
- Need more fat in the winter to stay warm
- Fresh fruit and vegetables for vitamins and minerals
- May struggle to cut (arthritis) or chew food (false teeth) and digestive problems.

### Special Dietary Needs

**Allergy:** an adverse reaction by the body to certain substances

**Intolerance:** condition that makes people avoid certain food because of the effects on their body

**Allergic reaction:** the way someone responds to certain food.
- For example: a rash/swelling/anaphylactic shock

### Type 2 Diabetes
- Starchy food/high in sugar

**Low fat diet**
- Foods naturally high in fat
- Foods cooked in a lot of fat

**Low salt diet**
- Processed food
- Smoked meat
- Chinese food with MSG

**Nut allergy**
- Avoid nuts, blended cooking oil, margarine with nut oils and often seeds

**Lactose intolerance**
- Avoid milk, cheese, yogurt, processed food

**Gluten intolerance**
- Avoid Wheat, wholemeal, bran, pasta, rye, beer.

**Iron deficiency anaemia**
- High iron food – red meat, dark green leafy vegetables

**Calcium deficiency**
- High calcium food – dairy
- High Vit. D food – tuna, salmon

**Dental Caries**
- Limit sugary food

**Cardiovascular disease and obesity**
- Correct portion size
- Reduce Saturated fats
- Fruit and veg to replace fatty food

### Specific Lifestyle Choices

**Muslims**
- Do not eat pork
- Meat must be halal
- No alcohol or shellfish

**Hindus**
- Do not eat beef (a cow is considered sacred)
- Many are vegan, although some do eat meat

**Jews**
- No pork or shellfish
- No milk and meat together
- Meat must be kosher

**Vegetarians - Ethical or moral choices**
- Dishes with vegetables generally healthy
- Need protein from other sources
- Risk of iron, B1, B9 and B12 deficiency
- Protein from Quorn/tofu

### Food Preparation and Nutrition:

- **People may have high energy needs if they are physically active, such as sports people or people who are on their feet a lot.**