

Knowledge Organisers



LYMM
HIGH SCHOOL

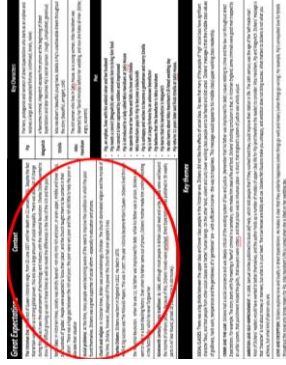
Year 8 2019

Self Quizzing: How to study independently using Knowledge Organisers:



1) Before you begin, use a blank piece of paper to write out a list of up to 9 things that are on your KO. Most people find that about 5 is a sensible amount of topics to work with.

These are the things you are going to focus on moving to your Long Term memory. You should decide on this by choosing a section of your KO, like this:



Your list should be names, headings or titles of the things on the KO that you are remembering, like this:

The Victorian Era:	
Social class:	
Social problems:	
Church and religion:	

2) Now, you are going to begin to work at remembering by using the Read, Cover, Write, Check, Correct (RCWCC) strategy that you have been trained to use.

READ

Method 1 : Find the **most important bits**, highlight, and **mentally verbalise** (this means that you should say them over and over again in your head).

Method 2: Make **links** between similar things, highlight, and **mentally verbalise** (this means that you should say them over and over again in your head).

HANDY HINT:
Many people find this easier to do if they close their eyes.

COVER

Cover up your KO, and keep mentally verbalising (saying it to yourself inside your head).

HANDY HINT:
If you are struggling here, it is because you didn't do enough mental verbalising when reading. Start the RCWCC again.

WRITE

Write as many things as you can remember in your table.

CHECK

Check how did by comparing your work to that section of your KO. Read very slowly and carefully, looking at the vocabulary that you used. How similar is it to what is on there? Remember – there can be subtle differences between words that can affect meaning.

CORRECT

Correcting your work is really important, but people often skip this bit. If you don't do it properly, the chances of it moving to your Long Term Memory are much less.

Remember that it is important to be really strict with yourself; if you have not quite been accurate, you must edit your work.

Social problems:

were becoming aware of the need to improve the condition in which the poor found themselves. Dickens was a great supporter of social reform - especially in education and prisons.

People ~~were~~ that there were poor people who needed help. Dickens supported ~~which~~ to improve the conditions especially in education and prisons.

people were becoming aware of the need to improve the condition in which the poor found themselves. Dickens was a great supporter of social reform - especially in education and prisons.

Tone	A tone is produced either by the mixture of a colour with grey, or by both tinting and shading. The mixture of a colour with black, which increases darkness.	
Shade		
Tint	The mixture of a colour with white, which increases lightness	
Mark making	Different lines, patterns, and textures we create in a piece of art. It applies to any art material on any surface, not only paint on canvas or pencil on paper.	
Composition	The position and layout of shapes on the paper	
Still life	A painting or drawing of an arrangement of objects.	
Cubism	A movement in art, especially painting, in which perspective with a single viewpoint was abandoned and use was made of simple geometric shapes, interlocking planes, and, later, collage.	

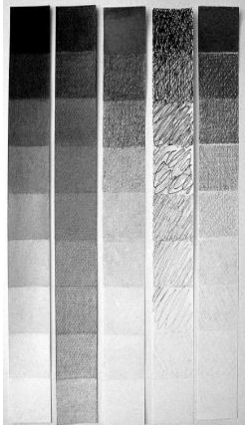
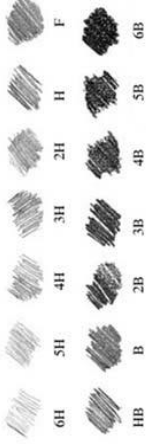
Recording from Observation

Primary source

observational drawing: drawing something real in front of you.

Secondary source

observational drawing: drawing something from a picture.



Grades of Pencils

Pencils come in different grades. The softer the pencil the darker the tone.

H = hard, B = black (soft)
In Art the most useful pencils are B, 2B and 4B.
If your pencil has no grade it is likely to be an HB (hard black in the middle of the scale).

What makes a successful photograph?

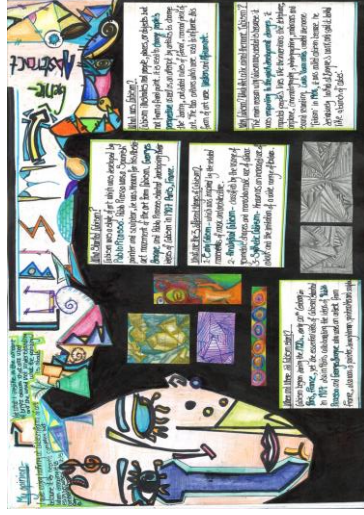
Rule of thirds: The guideline proposes that an image should be imagined as divided into nine equal parts by two equally spaced horizontal lines and two equally spaced vertical lines, and that important compositional elements should be placed along these lines or their intersections.



What makes a successful artist research page?

You must include:

- Artists name (title)
- Imagery of the artists work
- Annotation and your own opinion (facts about the artist as well as analysing the artists work)
- Your own drawings or 'mini studies' of the artists work.
- Consider presentation of your page. Try to make your page reflect the artists style (through use of colour or even media you choose to use).



ANNOTATIONS

As a general rule, always try to say:

- **WHAT** you have looked at
- **WHO** made it
- **WHEN** it was made
- **WHY** it is inspiring to you
- **HOW** it will effect your own work

When talking about your own work, try to say:

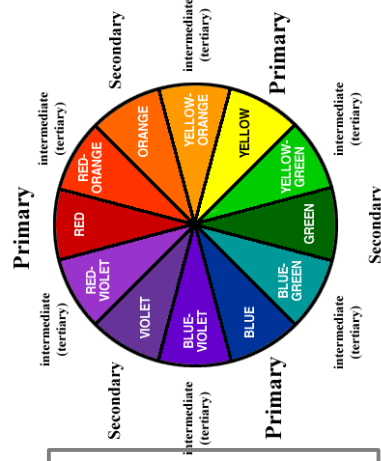
- **WHAT** you have done
- **HOW** have you done it
- **WHAT** inspired you
- **WHAT** else did you try
- **WHY** is it successful
- **IS** there anything you would change

ALWAYS TRY TO BE POSITIVE!

The colour wheel	This is a diagram that shows how colours are mixed or the relationship between colours.
Primary colours	Red, blue and yellow. These are colours that can't be made by mixing other colours together.
Secondary colours	Green, orange and purple. Mix two primary colours to create a secondary colour
Tertiary colours	These are colours create by mixing a primary and a secondary colour together.
Complementary colours	These are colours that are opposite on the colour wheel.
Harmonious colours	These are colours from the same section of the colour wheel. These work well when blending.
Cool colours	Fall on one half of the colour wheel. Calm or soothing in nature. They are not overpowering and tend to recede in space. For this reason, they typically make a space seem larger.
Warm colours	Fall on the opposite side to the cool colours on the colour wheel. They are vivid or bold in nature. They tend to advance in space and can be overwhelming.

Blending

- Always start with the lightest colour and add the darker colour in small amounts
- Harmonious colours blend well together.
- Cross hatching is a good mark making method when blending dry materials.
- Wet materials should be mixed on a palette before blending.



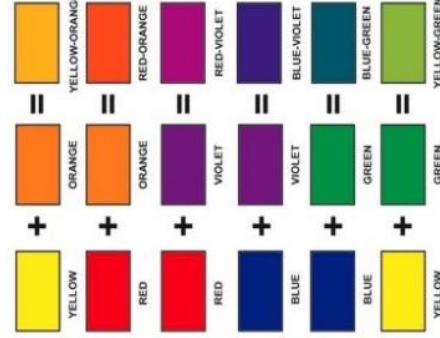
Mixing paint

- Always start with the lightest colour and add the darker colour in small amounts.
- Use a palette to mix your colour.



Scan here to view a help guide on mixing paint.

Primary + Secondary = Tertiary



D&T Year 8

Scan the QR code to learn about how to create Mind Maps



Scan the QR code to learn how to carry out a Task Analysis using ACCESSFM



Research

How to plan what Research you should collect....

Research helps the designer to design a product that will function well, appeal to the target market/audience and satisfy their needs and wants. Designers use the **Task Analysis** and **ACCESS FM** as a tool to help think about the sort of Research that needs to be collected.

The example below is focusing on the **S** for **Size** from **ACCESS FM**.

ACCESS FM	Research Required	Primary Research	Secondary Research	How it will help me with the design and manufacture of the outcome
S ize	Size of the Circuit Board, the speaker, the switch and the battery	I could measure all of the components with a ruler and record my findings	I could ask another student in the class if they have measured the components and use their data. I could look online for the company who makes them, to see if they publish the sizes before people buy them.	I need to know these measurements to ensure that I make the case large enough to hold all of the components. I need to know the size of the hole to drill for the switch. I need to know the size of the hole to drill for the speaker.

Scan the QR code to learn about why research and knowing your target market/audience is so important



Target Market/Audience Mood Board.....



How to carry out a Task Analysis..

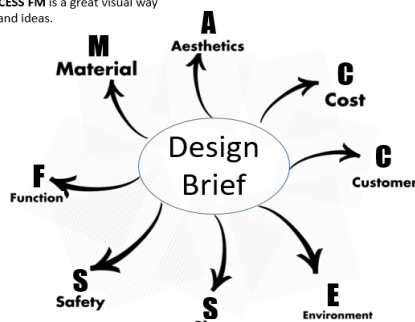
We use **ACCESS FM** to help us complete a **Task Analysis**. We also use **ACCESS FM** to write a **Product Specification**. Using a **Mind Map** with **ACCESS FM** is a great visual way to see all of your thoughts and ideas.

ACCESSFM helps us to remember all aspects of the design of a product.

The idea of a **Task Analysis**, is that you consider **ALL** options that are available to you.

A **Task Analysis** then leads you on to carrying out **Research** to help you come up with a solution to the **Design Brief** (Problem).

The **Research** will help you to make design choices and then finally write what's called a **Product Specification**.



UNDERSTANDING Your Target Audience

BRANDS OFTEN EMPLOY MARKET RESEARCHERS TO HELP THEM IDENTIFY AND UNDERSTAND CONSUMER HABITS. THE RESEARCHER WILL ESTABLISH WHO THEIR LIKES AND DISLIKES ARE OF THEIR TARGET AUDIENCE. THIS WILL HELP THE BRAND TAILOR THEIR PRODUCTS AND MARKETING TO THEIR CUSTOMERS' NEEDS, CAUSING THE GREATEST IMPACT.

Carry out your own research!

- Income:** Think about the income of your audience. Do they worry about money or can they afford to buy products impulsively. Are they looking for a luxury or a staple product.
- Routine:** What does your target audience do day to day? Do they commute or stay at home. When will they have time to interact with your idea?
- Lifestyle:** Does your audience live a healthy lifestyle? What are their priorities? Career, education, family or social lives? What do they do with their spare time? Do they have any hobbies? Do they worry about the environment?
- Life Stage:** Does your audience own their own property or still live at home? Are they parents or do they rely on their parents?

How to make a profile for a Target Market/Audience...

It is imperative that as a Designer, we know who it that we are designing for.

It is important that you know who your target market/audience is so that you can use their **likes** and **needs** to help to develop your product.

A target audience can be formed of people of a certain **age group**, **gender**, **marital status**, etc., e.g. teenagers, females, single people, etc.

To create a market/audience profile, a combination of factors is used. E.g. Men aged 20–30 who are single and living in an apartment in a city.

Discovering the appropriate target market/audience and determining the target market/audience is one of the most important activities in marketing management.

The biggest mistake is trying to target everybody and ending up appealing to no-one.

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ACCESSFM

A is for **Aesthetics**

Aesthetics means what does the product look like? What is the Colour? Shape? Texture? Pattern? Appearance? Feel? Weight? Style?

C is for **Cost**

Cost means how much does the product cost to buy? How much does it Cost to buy? Cost to make? How much do the different materials cost? Is it good value?

C is for **Customer**

Customer means who will buy or use your product? Who will buy your product? Who will use your product? What is their Age? Gender? What are their Likes? Dislikes? Needs? Preferences?

E is for **Environment**

Environment means will the product affect the environment? Is the product Recyclable? Reusable? Repairable? Sustainable? Environmentally friendly? Safe for the environment? **AK's of Design:** Recycle / Reuse / Repair / Rethink / Reduce / Refuse

S is for **Size**

Size means how big or small is the product? What is the size of the product in millimeters (mm)? Is this the same size as similar products? Is it comfortable to use? Does it fit? Would it be improved if it was bigger or smaller?

S is for **Safety**

Safety means how safe is the product when it is used? Will it be safe for the customer to use? Could they hurt themselves? What is the correct and safest way to use the product? What are the risks?

F is for **Function**

Function means how does the product work? What is the products job and what is needed for it to work? How well does it work? How could it be improved? Why is it used this way?

M is for **Material**

Material means what is the product made out of? What materials is the product made from? Why were these materials used? Would a different material be better? How was the product made? What manufacturing techniques were used?

The Design Process: A cycle of steps that a designer follows from the origin of a design problem to the solution of a design problem.

Design Context: Background information explaining the need or problem. The Design Context explains why it is necessary to solve the problem.

Design Brief: This is a statement that explains exactly what should be designed or made. The Brief can include specific information such as, what materials should be used or the Brief could be very general, which allows the Designer more freedom when creating a solution to the problem.

Task Analysis: This is where you break down the Design Brief and consider all aspects of the Designing and Making problem. To complete a Task Analysis, ACCESS FM is used to create a Mind Map.

Mind Map: A mind map is a diagram used to visually organise information. It is a diagram for representing tasks, words, concepts, or items linked to and arranged around a central concept or subject using a non-linear graphical layout.

Research: Collecting information about the Design Context. This information helps the designer to design a product that will function well and appeal to the target audience.

Primary Research: This involves gathering new data that has not been collected before. For example, surveys using questionnaires or interviews with groups of people in a focus group.

Secondary Research: This can also be known as desk research. This involves gathering existing data that has already been produced.

Product Specification: A list of requirements that helps determine the final design of the product. Research must be carried out in order to write the list.

How to write a Product Specification...

A **Product Specification** is list of requirements that helps determine the final design of the product.

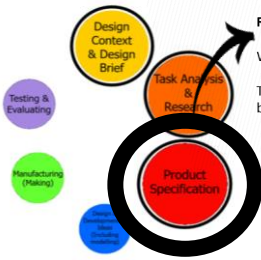
Research MUST be carried out in order to write the list.

We use **ACCESS FM** to help us write a **Product Specification**.

The specification will help you plan and develop design ideas to result in a final product. You will also need to refer back to your specification throughout your folder in order to **Evaluate** effectively.



The Design Process...



How to write a Product Specification

The **Product Specification** is written in bullet point sentences.

From your research you can make design choices. For example you will decide which is the best material to use and what size you should design and make your product. You should always finish your sentence by explaining **WHY!**

Some statements can be very specific...

- The colours of the chair **MUST** include red, white and blue, as these are the most preferred colours from my Target Market/Audience.

Some statements will be more general...

- The colours used on the chair **SHOULD** be suitable for a library in a Primary School, as this is where the chair will be used.

Notice how the words changed in the sentence from **MUST** to **SHOULD**.

Use the words below to help you write a **Product Specification**:

- Could have/Could be/Could include
- Must have/Must be/Must include
- Should have/ Should be/ Should include

And remember.....
Think about what features of the design are a **MUST** statement but other features are **COULD** or **SHOULD** statements!

Some Examples...

These are examples for Graphical Products for a Fast Food Restaurant. The student is designing a Menu, A Menu Holder and a Hot Food Box. Read the sentences and look at the way that the student has used **SHOULD** and **COULD** to describe the design features. Look at how the student has explained **WHY** in each of the sentences. There are no **MUST** statements. Can you think of a **MUST** statements for any of the three Graphical Products that are being designed?

The hot food box should be manufactured from corrugated card as this is a relatively cheap material that can be recycled.

The menu display stand should be designed so that it could be commercially manufactured using the die-cutting process.

The menu should be rectangular in shape so that manufacturing is cost effective and there is no wastage.

I could design a menu holder that is shaped around the theme of a popular children's film as this would attract their attention and make them want to come in to the fast food restaurant.

The hot food box should be designed in colour and use the four colour printing process.

At school I will be printing my menu on the laser printer, but commercially it would be printed using Offset Lithography.

Target Market/Audience: A particular group of consumers at which a product or service is aimed at.

Perceived Obsolescence: The part of planned obsolescence that refers to "desirability". In other words, an object may continue to be functional, but it is no longer perceived to be stylish or appropriate, so it is considered obsolete by perception, rather than by function.

Planned Obsolescence: A policy of producing consumer goods that rapidly become obsolete and so require replacing, achieved by frequent changes in design, termination of the supply of spare parts, and the use of non-durable materials.

Obsolete: No longer produced or used.

Analysis: A detailed and thorough study used to understand the essential features.

Wood: The hard fibrous material that forms the main substance of the trunk or branches of a tree or shrub. Wood is used for fuel or timber for building or making objects.

Hardwood: The wood that comes from deciduous trees. Also known as broadleaved trees such as oak, ash, or beech.

Softwood: The wood from coniferous trees (ever green trees) such as pine, fir or spruce.

Manmade Boards: Engineered wood, also called composite wood, man-made wood or manufactured board.

Plastic: A synthetic material made from a variety of organic, synthetic or processed materials that are mostly thermoplastic or thermosetting plastics.

Thermosetting Plastic: Thermoset plastics can only be heated and shaped once

Thermoplastic: Thermoplastics can be heated and shaped many times

Circuit: An electrical circuit is a path or line through which an electrical current flows.

Solder: A soft metal that is melted in order to join together pieces of metal together. When it cools it becomes hard again.

Topic: Commodities - Meat, Poultry, Fish & Eggs

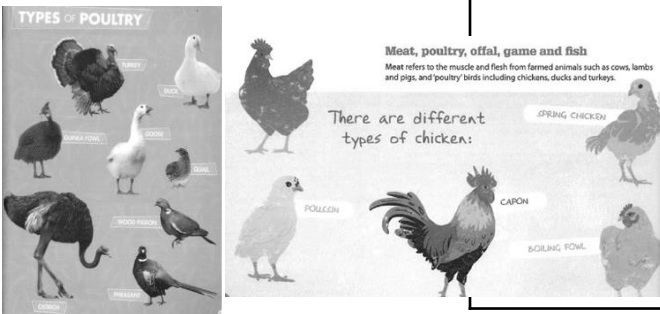
MEAT

Meat is an important food commodity which provides nutrients essential for health. Meat is sourced from animals. Poultry is the name given to domestic fowl.

The muscle tissues of dead animals and birds are classified as meat and poultry, whereas the edible internal organs are called Offal. Game refers to wild animals



Sources of meat in the UK include:



Horsemeat	Horsemeat is one of the most controversial meats because for many people the killing of horses for meat is still an emotive subject. The facts remain that it is a healthy meat choice. It has a lower fat content and more omega-3 than to beef. Horsemeat is fairly similar in taste to beef but with a slightly sweeter or subtle game flavour.
Goat	Known as Cabrito/Chervon or kid or goat. It is believed that 80% of the world's population has goat in their diet, it is not as widely popular in the UK. It is typically found in 'ethnic' butcher shops, particularly those serving the Caribbean community, where goat is a staple.
Rabbit	Rabbit was popular in the UK in the 1940's and 1950's when meat was rationed during and after World War 2. It was freely available and if you could catch one. Rabbits were bred especially for meat purposes in homes during the war. The meat is low in fat, cholesterol free, high in protein and tastes similar to chicken.
Venison	Venison refers to the meat of a deer. It is classed as game and can either be farmed-reared (methods vary from free range to intensive) or park-reared in herds that roam parklands. Venison is a red meat, similar to beef but leaner and with a slightly richer taste. It is more communally eaten as 'made-up' commodities such as sausages, salami, burgers and rissoles.
Poultry	Poultry is a very popular food in the UK and is common on restaurant and takeaway menus. Domestic examples include: Chicken, turkey, goose, duck, guinea fowl, poussin (young chicken), quail and ostrich. Game examples include: Partridge, pigeon and pheasant. Poultry is reared in different ways: Indoors in large numbers – a standard chicken is about 40 days old when it is slaughtered Free-range – chickens are allowed outside and reared in large sheds: they are 56 days old when they are slaughtered. Organic – chickens are allowed to roam the fields and are given organic food to eat. They are 80 days old when slaughtered and their meat is usually more expensive to buy. Chicken is the most widely eaten poultry in the world. It has both white and dark meat and has much less fat compared to other poultry. Specialised breeds have been developed for meat (broilers) and eggs (layers)

Beef	British reared breeds such as Aberdeen Angus, Longhorn and Hereford have traditionally been considered to provide the best beef in the world.
Organic Beef	Organic beef and beef from rare breeds, is the most expensive to buy as the highest farming standards will have been needed at all stages of the animal's life. The length of time for which beef has been hung will also determine how flavoursome and tender it is. 10-14 days is a good length of time. Some super-premium beef is hung for up to six weeks.
Wagu Beef	Wagu meat comes from a group of Japanese breeds whose meat is renowned for its high level of fat marbling. Western beef has white streaks through it, wagu has more fat than flesh and looks with a splattering of pink. Wagu meat is extremely delicate. The soft fat has a low melting point, due in part to its high proportion of monosaturated fats, to go along with high levels of omega-3 and 6. Fat is where the flavour of meat resides. The taste of wagyu is smooth, velvety and sweet. Many consider it to be the juiciest richest steak in the world.
Veal	Veal meat comes from the male calves of cows bred for dairy, slaughtered when they are a few months old. For years' veal has been shunned by British consumers on welfare issue grounds. However, Freedom Food Laws and improved welfare standards for rearing calves have enabled veal to regain its popularity in supermarkets and on restaurant menus in recent years.
Meat from sheep	Lamb is sheep under one-year-old. Hogget is a lamb older than one year. Mutton is the meat of older sheep.
Meat from Pigs	Pork This is all the meat that comes from pigs. To add extra choice pork can be cured and smoked.
	Ham This is a specific cut of the thigh part of the pig which has been cured and or salted.
	Bacon This is produced by curing pork with salt or in brine solution. After maturing it is sold as unsmoked bacon. It can be smoked to add extra flavour to the bacon. The meat is usually darker in colour and has a distinctive flavour.
	Gammon This is cured whole leg of pork. It is cut into slices and eaten hot as gammon steaks. It could be eaten cold as ham. Some hams may be cured and smoked such as 'honey roast'. This adds a distinctive flavour and extends the shelf-life of the product.

Know your beef meat cuts

Sections of the carcass

Neck
The neck produces a variety of cuts for braising, slow cooking and stewing. The meat is commonly used to produce mince, commonly used to produce e.g. burgers.

Shin
Cuts from the shin are available in a variety of sizes and are suitable for braising, slow cooking and stewing. The meat is commonly used to produce mince, commonly used to produce e.g. burgers.

Chuck
The chuck produces a variety of cuts for braising, slow cooking and stewing. The meat is commonly used to produce mince, commonly used to produce e.g. burgers.

Brisket
The brisket produces a variety of cuts for braising, slow cooking and stewing. The meat is commonly used to produce mince, commonly used to produce e.g. burgers.

Fore Rib
This is a traditional cut of beef which is available either on the bone or without. It is a popular cut for braising, slow cooking and stewing. The fat marbling makes it a very succulent piece.

Sirloin
This is a lean cut of beef which is available either on the bone or without. It is a popular cut for braising, slow cooking and stewing. The fat marbling makes it a very succulent piece.

Topside/Silverside
This is a lean cut of beef which is available either on the bone or without. It is a popular cut for braising, slow cooking and stewing. The fat marbling makes it a very succulent piece.

Rump
The rump is a lean and tender cut of beef which is available either on the bone or without. It is a popular cut for braising, slow cooking and stewing. The fat marbling makes it a very succulent piece.

Cooking techniques

- Barbecuing and grilling
- Roasting
- Frying and stir-frying
- Slow cooking

For more information about meat, go to www.meatandeducation.com

Know your lamb meat cuts

Sections of the carcass

Neck
Meat from the neck contains a high proportion of connective tissue and can require long cooking times. It is commonly used to produce mince, commonly used to produce e.g. burgers.

Best end of Neck
Best end comes from the first eight ribs of the carcass known as a rack of lamb. Cuts from the best end can also be produced from the best end.

Shoulder
The shoulder produces excellent and tender roasting joints with good flavour available either on the bone or boned and rolled. The meat is also used to produce mince.

Knuckle
Meat from the knuckle produces excellent and tender roasting joints with good flavour available either on the bone or boned and rolled. The meat is also used to produce mince.

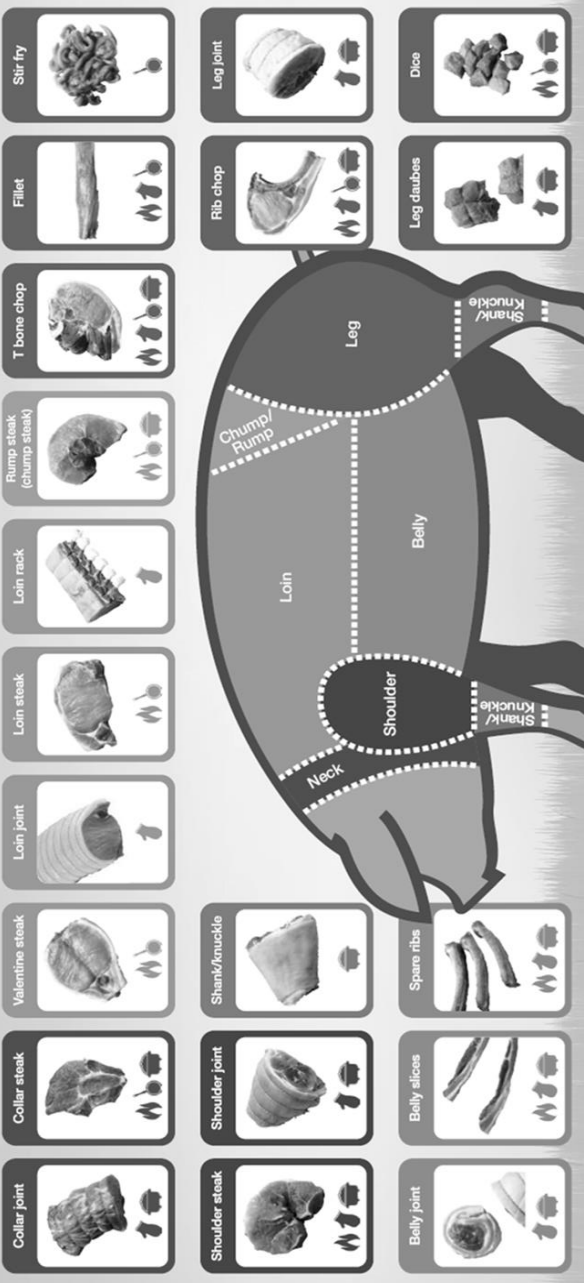
Leg
The leg produces an excellent roasting joint which is also often cut into a range of leg steaks and stir-fry strips for quick cooking.

Cooking techniques

- Barbecuing and grilling
- Roasting
- Frying and stir-frying
- Slow cooking

For more information about meat, go to www.meatandeducation.com

Know your pork meat cuts



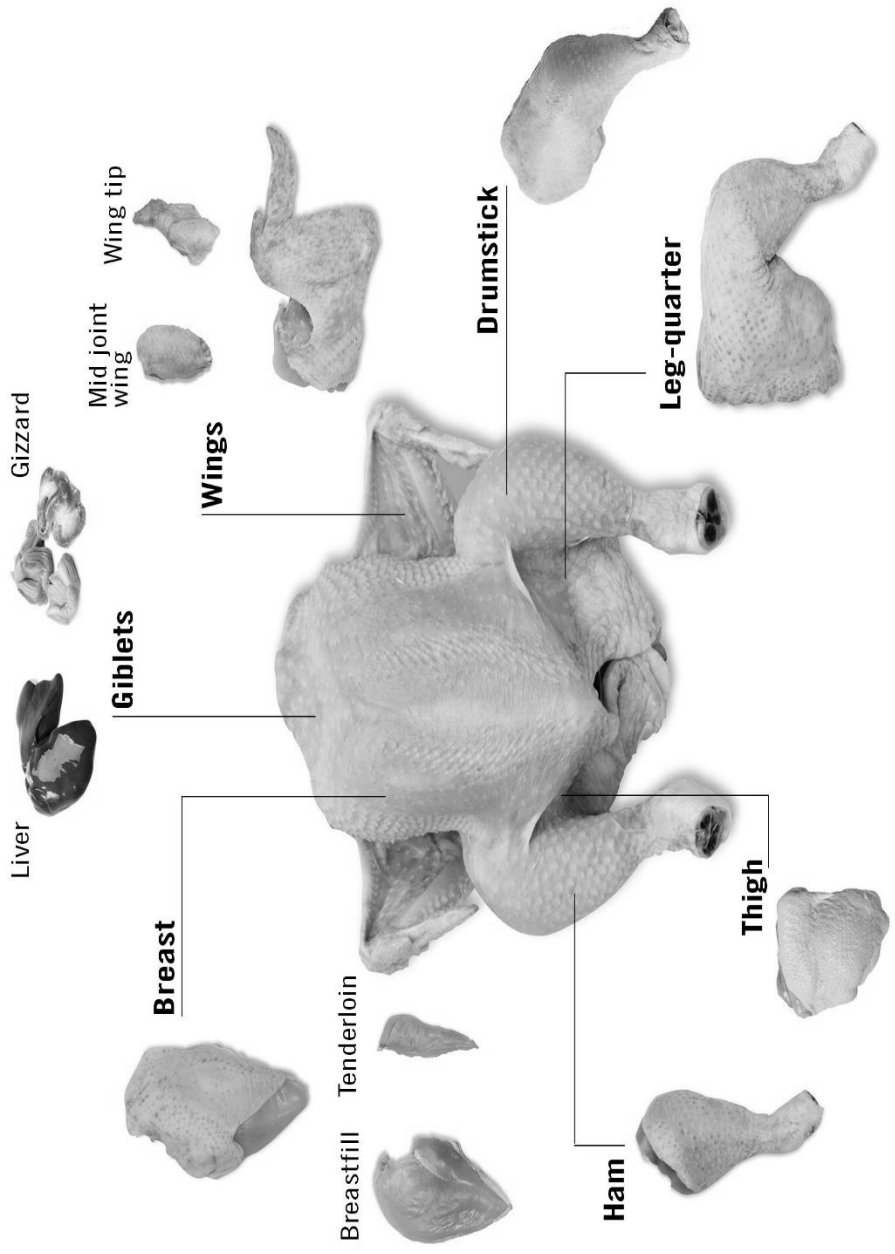
Cooking techniques

- Barbecuing and grilling
- Roasting
- Frying and stir frying
- Slow cooking

Sections of the carcass

- Neck**
The neck (or collar) produces delicious meat which can be slow cooked to allow connective tissue to allow for moist and tender. Ideal - keeping the meat in stock.
- Shoulder**
The shoulder produces a very tender, succulent joint which is suitable for either roasting or slow cooking.
- Loin**
The loin is a very versatile and lean cut of meat. All cuts from the loin are suitable for grilling or frying.
- Chump**
The chump and is positioned at the rear of the pig. It includes the rump and boned, wider and longer than those from the loin.
- Leg**
A wide range of roasting joints is produced from the leg. The meat is often divided into steaks and stir fry strips are prepared for quick cooking.
- Mince**
Pork mince is produced using forequarter meat.

For more information about meat, go to www.meatandeducation.com



Topic: Commodities - Meat, Poultry, Fish & Eggs

Fish - Fish is an important food commodity, which provides nutrients essential for health. Fish are usually classified according to their physical structure and composition.

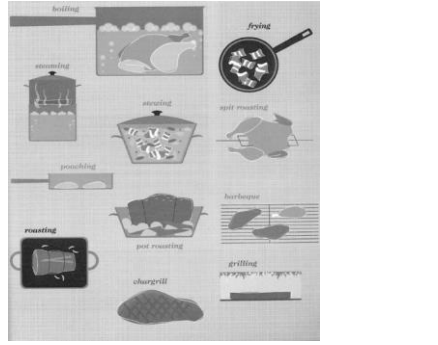
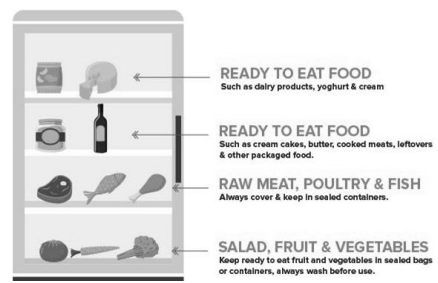
White fish
White fish have less than 5 per cent fat (oil) in their flesh, which is why their flesh appears white. Instead, they have oil in their liver. Examples of white fish are: cod, haddock, halibut, whiting, coley, plaice and Dover sole. White fish are round (e.g. cod, haddock and whiting) or flat (e.g. plaice and sole). These have white skin underneath and dark skin on top for camouflage. Most white fish are sea water fish and live on the bottom of the sea bed. This group of fish are known as white fish because of the colour of their flesh—not the skin. Only minute traces of fat are found in this fish flesh.

Oily fish have between 10 and 20 per cent fat (oil) in their flesh, which makes their flesh quite dark. Examples of oily fish are mackerel, herring, pilchard, sprat, sardines and salmon. Oily fish that have fat distributed through the flesh in the muscles fibres— (never separate like in meat). They contain—on average 10% fat. They are **sea fish** such as herring, mackerel, sardines and tuna or **fresh water fish** such as trout. Or **both** such as salmon that live in the sea but return to the river to mate and lay eggs.

Shell fish are found in the sea. Shellfish are divided into: **Crustaceans** – these have a shell and legs. Examples include prawns, scampi, lobster, and crab. **Molluscs** – these have a shell but no legs and they often fix themselves to rocks. Examples include cockles, mussels, winkles and oysters.

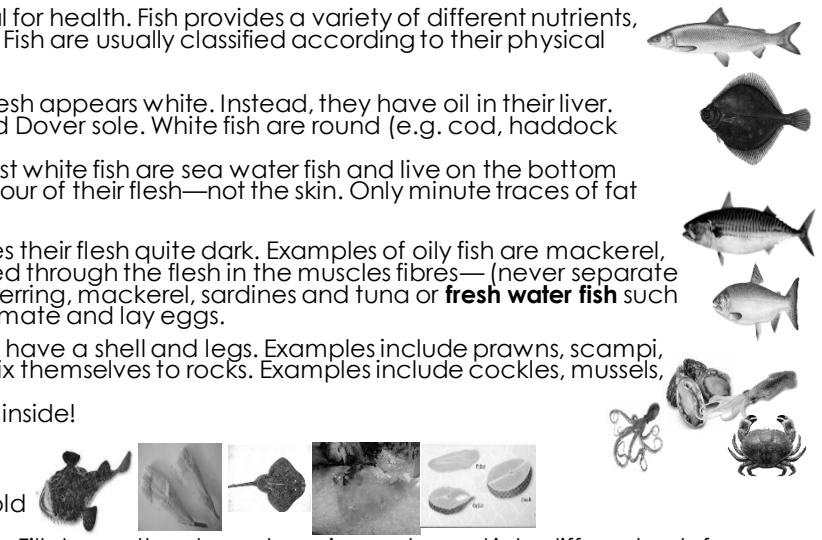
Squid and Octopus - are also classed as molluscs—even though their shell is inside!
Fish produced in fresh water include trout and carp

Cuts of fish:
Large fish (e.g. cod, coley, haddock) are cut into fillets, steaks or cutlets.
Small and medium fish (e.g. herrings, mackerel, rainbow trout) are usually sold whole and can be filleted by removing the backbone, tail, head and fins.
Very small fish (e.g. sprats and whitebait) can be fried and eaten whole.



Storing Meat, Poultry and Fish

- Should be bought from a reputable supplier
 - Should be stored in a leak-proof container
 - Must be stored at 5°C on the bottom shelf of a fridge.
 - Raw meat, poultry and fish must be stored on a shelf below cooked meat, poultry and fish
 - Must be used as soon as possible or frozen to use later.
 - Fish and offal should be used the same day as purchase because they 'go off' very quickly.
- Raw meat, poultry and fish can cause food poisoning due to incorrect storage, cross-contamination from food handlers not washing their hands and equipment after preparation, and the meat, poultry and fish not being cooked thoroughly.
- All raw meat, poultry and fish carry pathogenic bacteria such as Salmonella, Campylobacter and E. coli, with raw chicken being the main source for campylobacter contamination.



Fillets can then be cut again - or shaped into different cuts for different dishes. Some fish have different parts eaten! A skate fish's wings are the parts eaten. A monkfish's tiny tail is all that is eaten.

Ways of preserving fish.

- Salting** - If enough salt is used, then the fish may keep for up to a year.
- Smoking** - Fish can be smoked using different techniques. Hot smoked fish are moist, lightly salted and fully cooked. They can be eaten without further cooking. Cold smoked fish are generally saltier in flavour and have less moisture. Cold smoking does not cook the fish. It merely adds a smoked flavour. Smoked fish and salted fish such as kippers and bloaters should have a firm flesh, shiny skin and a good 'smoky' smell.
- Pickling** - Pickling fish was originally conceived as a way to preserve it. It is a common technique in Scandinavia. Pickling is now used widely to add flavour and sharpness.
- Canning** - Produces a moist, flaky product and makes the bones edible. Oily fish and shellfish such as tuna, salmon, and prawns can be canned in brine, tomato sauce or oil which adds flavour to the fish.
- Drying** - Fish are laid out to be dried.
- Freezing** - Packaged in blocks or freeze in water brushing glaze on top.

Sustainability

All fisheries and anglers have to operate under strict management regimes. Many stocks are currently very healthy. Many of the most plentiful species are exported, so there is scope to increase UK consumption of these fish stocks. The Fish Environmental Stewardship logo means that the fish are caught with minimal impact on stocks, ecosystems and the environment, which helps ensure that the fish we eat today will still be available in the future.



RSPCA Assured
Previously Freedom of Choice, this is the RSPCA's ethical food label dedicated to animal welfare. The RSPCA Assured label makes it easy to recognise products from animals that have had a better life. It is found on the packaging of meat and dairy products which have met animal welfare standards.

Red Tractor
The Red Tractor logo gives information on where the food has been farmed, processed and packed. Food given to animals on farms displaying the Red Tractor logo is safe from them to eat with no risk of contamination to the meat or milk produced. The animals' health and welfare is regularly checked. Farmers under this scheme must also use responsible farming methods not to pollute land and minimise the impact of their farming methods on wildlife, fauna and flowers.

Eggs
Eggs are an important food commodity which provides nutrients essential for health. Eggs provide a variety of different textures, colours and flavours to dishes. Eggs can be used in a variety of different ways.

Organic
These are more expensive as hens have to have access to organic land and eat an organic diet.

Free Range:
The hens are reared in large barns with daytime access to outside runs. There are no feeding guidelines (by products and GM foods to increase productivity and profit margins)

Barn:
The hens are reared in barns with no outside access. They are provided with perches, platforms, nest boxes and litter areas. Areas can be quite crowded with up to 16,000 hens in a barn—depends on the keeper.

Caged:
This makes up approximately 78% of the market. Hens are crammed into a cage so small they can't stretch their wings. The space they have is about the size of an A4 (this page) piece of paper. They cannot follow their natural behaviour patterns. Their bodies suffer through lack of exercise. Birds can lay dead for days before they are taken out of the cage. Debeaking, brittle bones, tumours and pecking are common.

The structure of a hen's egg
The shell: consists of an outer cuticle (a transparent, protective coating, a true shell and inner membranes. The shell is porous (pores are tiny holes), and therefore allows the developing chick to obtain oxygen. At one end of the egg, the membranes separate into an air space, to supply the chick with oxygen.

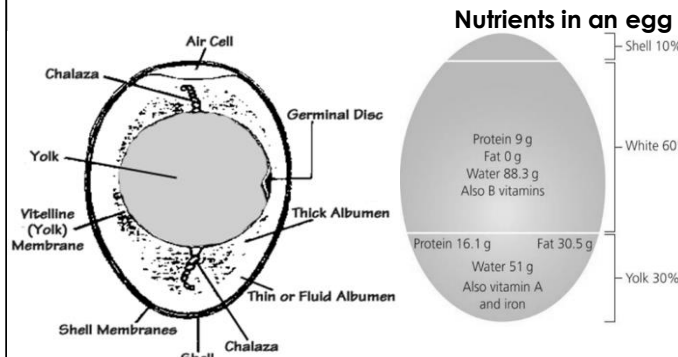
The air space: increases in size as an egg gets older, because water is lost from the egg and air is drawn in. The fresher the egg, the smaller the air space. This is why fresh eggs sink in water and rotten eggs float.

The yolk: full of goodness (vitamins A, D, E & K) and has a higher concentration of protein than the white.

The white: contains riboflavin and other B vitamins and a small trace of fat

The anchors/chalazae: white strands attached to the thick albumen which anchor the yolk in the middle of the egg.

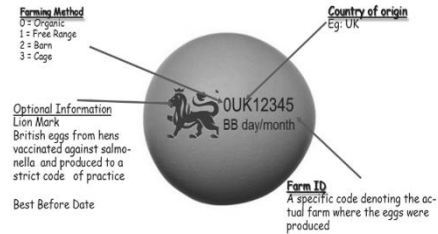
Topic: Commodities - Meat, Poultry, Fish & Eggs



Sizing Eggs

Size	Weight
Small	53g + under
Medium	53 – 63g
Large	63 – 73g
Extra Large	73g + over

Labelling Eggs



How to grade Eggs

All eggs sold at grocery stores must meet strict standards. Only those of high quality reach the consumer. Eggs must be checked for interior quality by candling, a process where eggs are passed over a strong light to show the shell and interior.

Grade A:

- Thick white
- Round, well centered yolk
- Small air cell (less than 5mm deep)
- Clean, un-cracked shell with normal shape

Grade B:

- Mostly used for commercial baking or go to hospitals, restaurants, etc. very few are sold at retail stores.
- Yolk is slightly flattened; white is thinner
- Shell is un-cracked and may have a rough texture; and/or be slightly soiled and stained.

Grade C:

- The lowest egg grade, these are used in the production of processed egg products only. They are not sold in retail stores
- Yolk is flattened and may be oblong in shape; white is thin and watery.
- Shell may be cracked and/or stained

Storing eggs

Eggs should be stored in the fridge or a cool place away from strong smelling foods. Eggs should be stored blunt end upwards. They should be removed an hour or so before use, because cold eggs do not whisk well.

Eggs stay in good condition if stored correctly for two to three weeks. Eggs cannot be frozen whole but the whites and yolks can be frozen separately in containers. Always use eggs by the best before date.

Eggs can be preserved by pickling.

Testing for freshness

A bad egg will also feel extremely light in weight and give off a pungent smell. A very fresh egg will immediately sink to the bottom and lie flat on its side. This is because the air cell within the egg is very small. The egg should also feel quite heavy.

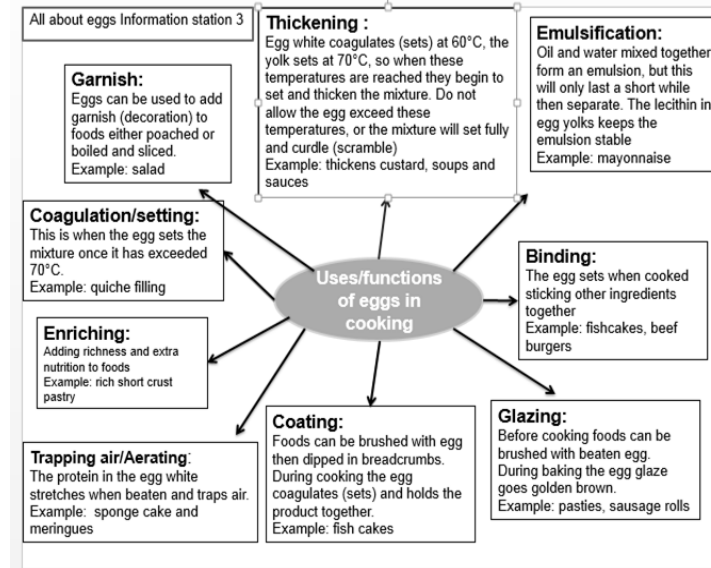
The second method to test the eggs freshness is by breaking the egg onto a flat plate, not into a bowl. The yolk of a very fresh egg will have a round and compact appearance and it will sit positioned quite high up in the middle of the egg. The white that surrounds it will be thick and stays close to the yolk. A less fresh egg will contain a flatter yolk, that may break easily and a thinner white that spreads quite far over the plate.

Cooking Eggs

Eggs are cooked for a variety of reasons. To make it safe to eat and kill harmful bacteria. To improve the flavour and texture and to make the colour more appealing. To make the nutrients more digestible and available to the body.

Eggs can be cooked by:

- Boiling
- Frying
- Scrambling
- Baking
- Poaching



Topic: Commodities - Milk and Dairy Produce

Milk

Milk is an important food commodity which provides nutrients essential for health. Milk is considered nature's most perfect food. A variety of different foods can be made from milk.

Milk is a pale liquid produced by the mammary glands of mammals. It is the primary source of nutrition for infant mammals (including humans who breastfeed) before they are able to digest other types of food. Early-lactation milk contains colostrum, which carries the mother's antibodies to its young and can reduce the risk of many diseases. It contains many other nutrients, including protein and lactose.

Where does Milk come from?

Milk can come from, a cow, a goat, a sheep and even a horse. Milk can also be made from soya beans, rice and wheat.

How does a cow produce milk?

A dairy cow needs to give birth to a calf in order to produce milk. This chart represents a one-year period. The 'dry' period is similar to an adult going on maternity leave, where the cow will rest and prepare for the birth of her calf.

A dairy farmer's main concern is the health and welfare of their cows. The **freedoms** below ensure that farmers keep their cows healthy on the dairy farms.

The Farm Animal Welfare Council's 'Five Freedoms' are:

- Freedom from hunger and thirst;
- Freedom from discomfort;
- Freedom from pain, injury or disease;
- Freedom to express normal behaviour;
- Freedom from fear and distress.

Most dairy cows are housed during the winter and bad weather. The cows can move freely, socialise and eat and drink when they want in sheds that have natural light.

Dairy cows mostly graze outdoors during the summer, moving from indoor housing. Outside they can easily graze at their own leisure, exercise, get fresh air and natural light.

What if the weather turns bad?

In the winter and during bad weather, most dairy cows are housed. Sheds are designed to be extremely spacious and airy, allowing the cows to rest, stand and move around freely to exercise and socialise.

Sheds are carefully designed to ensure that the 'Five Freedoms' are met, and to maintain the health and welfare of the cows.

Who helps the farmer look after the health and welfare of cows?

Herd health checks are carried out regularly. The farmer works closely with a veterinarian and animal nutritionist to ensure the highest quality of health and welfare for the dairy cows.

Each dairy cow has an animal passport showing where the cow was born and any other places it has been moved to.

What do dairy cows eat?

Most British dairy cows eat grass during the summer and silage (dried grass or maize) in the winter.

This is usually supplemented with dry feeds such as cereals and protein feeds with added vitamins and minerals to ensure the cows have a nutritionally balanced diet.

The diet of a dairy cow

Each dairy cow eats between 25 and 50 kilograms of feed each day. A dairy cow drinks around 60 litres of water per day.

Some cows may need up to drink 100 litres, or more, depending on how much milk they produce.

How often are cows milked?

Milking is very similar to a calf suckling. Dairy cows would feed their calves naturally, at four to six hourly intervals. Cows are milked at different times depending on the farm and the type of parlour used.

Milking

Here are three examples of different ways in which cows are milked:

In a herringbone parlour, the cows line up beside each other at an angle. The farmer accesses the udders from a sunken pit.

In a rotary parlour the cow stands on a circular raised platform which rotates slowly.

The farmer attaches the milking machine from below.

In a robotic milking parlour, the cows choose when to be milked.

The milking machine automatically connects to the cow's udders and turns off when the milking is complete.

The Environment

There is more to the farm than cows. Britain's hedgerows are regularly maintained by farmers to provide a breeding ground for birds and other wildlife.

Many dairy farmers leave a strip of grass around the edge of the pastures for planting trees and establishing ponds to attract wildlife. Some farmers will leave maize stubble in fields over the winter for ground nesting birds - this is so they can nest amongst the stubble.

Water conservation

Water is essential for dairy farming. Cows must drink and the farmer needs to clean the milking parlour and other equipment.

British dairy farmers are constantly looking at ways to conserve water and reduce costs without compromising either animal welfare or dairy hygiene. Water is often recycled on farms.



Red Tractor Farm Assurance ASSURED DAIRY FARMS

Red tractor scheme

The Red Tractor symbol on packaging helps consumers know that the milk and dairy foods have been produced according to the high standards of the Assured Dairy Farms scheme. This has been developed by dairy farmers, processors, the National Farmers Union and the British Cattle Veterinary Association.

LEAF Marque

The LEAF Marque is a food assurance scheme showing that food has been produced with environmental care.

Food displaying the LEAF Marque logo has been produced by farmers who carry out a wide range of activities to look after the environment and its wildlife. These include managing hedgerows for wildlife, using pesticides and fertilisers only when absolutely necessary, leaving a strip of land between hedgerows and crops to act as a habitat for wildlife, recycling on-farm waste, conserving energy and improving water efficiency and quality.



Whole milk	Milk with nothing added or removed. Fat content: 3.9%.
Semi-skimmed milk	The most popular type of milk in the UK. Fat content: 1.5%
Skimmed milk	Milk that has had most of the fat removed. Fat content: 0–0.5% (average 0.1%)
1% fat milk	Offered to consumers who like the taste of semi-skimmed, but want milk with a lower fat content.
Organic milk	Milk from cows that have been grazed on pasture that has no chemical fertilisers, pesticides or agrochemicals used on it.
UHT milk	Milk that has been heat treated to give it a longer shelf life. Once opened it must be treated in the same way as fresh milk.
Lacto-free milk	Milk that has had the milk sugar (lactose) removed, making it suitable for those who have an intolerance to lactose.
Soya milk	Made from the liquid of cooked soya beans. It is suitable for vegans who do not eat any animal products, or as a substitute milk for those who are allergic to dairy food.
Almond and coconut milk	An alternative for vegans or people with allergies.
Goat's milk	Another substitute milk for people allergic to cow's milk.
Evaporated milk	A concentrated, sterilised milk product. It has a concentration twice that of standard milk. Evaporated milk is heat treated and then evaporated under reduced pressure, at temperatures between 60°C and 65°C. The evaporated milk is poured into cans, which are then sealed. At this point the cans are moved to a steriliser where they are held for 10 minutes.
Condensed milk	Concentrated in the same way as evaporated milk, but with the addition of sugar.
Dried milk powder	Produced by evaporating the water content of milk using heat.

Topic: Commodities - Milk and Dairy Produce

How milk is used:

- As a drink on its own or flavoured – for its nutritional content.
- Added to cereal to improve the nutritional content, it changes the texture
- As an essential ingredient in batter, sauces and custards—it allows gelatinisation., combining with egg to coagulate into a soft product.
- In baked products such as cakes, biscuits and bread, providing moisture to help them rise and produces a soft texture as it stops starch and fat clumping together.
- The fat is separated from the rest of the milk to make cream
- When acid is added it curdles and becomes solid or semi-solid, making cheese
- Cream is churned (moved around quickly—beaten) to make butter
- Yoghurt is fermented milk. A bacteria culture is added. This breaks down the protein and makes it coagulate (thicken). Acid is also produced.

Ways to preserve milk - Heat treatments

Pasteurised

- ✓ A mild heat treatment.
- ✓ It only kills pathogenic bacteria to make it safe to drink.
- ✓ It extends the shelf life.
- ✓ It needs to be kept chilled.
- ✓ There is no change in flavour or nutritional value.
- ✓ The fat (cream) rises to the top.

UHT or Long life

Milk is sterilised—heated to 100°C for 20 minutes to kill all bacteria. It also destroys the B vitamins. Milk is homogenised. Milk is packaged using aseptic packaging.

Evaporated Milk

Evaporated milk is a concentrated, sterilised milk product. It has a concentration twice that of standard milk. The process of producing evaporated milk involves standardising, heat treating and evaporating the milk under reduced pressure, at temperatures between 60°C and 65°C. It is then homogenised and cooled. The evaporated milk is poured into cans, which are then sealed. At this point the cans are moved to a steriliser where they are held for 10 minutes. A cooling stage follows and the cans are then labelled and packed.

Condensed Milk

Condensed milk is concentrated in the same way as evaporated milk, but with the addition of sugar. It is not sterilised but is preserved by the high concentration of sugar. It can be made from whole milk, semi-skimmed or skimmed milk. The heat treatment used consists of holding standardised milk at a temperature of 110-115°C for one to two minutes. The milk is then homogenised, the sugar added and the sweetened milk is then evaporated at low temperatures (between 55-60°C). The concentration of the condensed milk is now up to 3 times that of the original milk. The milk is then cooled rapidly to 30°C and packaged. Sweetened condensed milk is commonly used in the sugar confectionary industry for the production of toffee, caramel and fudge.

Dried Milk Powder

Milk powder is produced by evaporating the water from the milk using heat. The milk is homogenised, heat treated and pre-concentrated before drying.

Skimmed milk powder can be mixed easily with water; however whole milk isn't easily reconstituted due to its higher fat content.

Whole milk powder contains all the nutrients of whole milk in a concentrated form with the exception of vitamin C, thiamin and vitamin B12. Skimmed milk powder contains hardly any fat and therefore no fat soluble vitamins. However, the protein, calcium and riboflavin content remain unaffected.

If stored correctly, skimmed milk powders can be kept for up to one year. Once they are reconstituted, they must be treated as fresh milk.

Cream is derived from the fat found in all fresh milk. Cream is the concentrated fat, which has been skimmed from the top of milk.

Cream has a high fat content ranging from 18-55% fat depending on the production process used. The levels of saturated fat in cream are the reason why it should really not be eaten too frequently because of its links with coronary heart disease and raise cholesterol levels. The different types of cream available in the UK are legally defined by the percentage of fat that they contain.

Cream also contains:

- Low levels of HBV protein
- Low levels of calcium
- Low levels of vitamins A and D

Types of cream:

- Single cream
- Double cream
- Whipping cream
- Clotted cream
- Ultra heat treated (UHT) cream

Uses of cream

Cream is used to add a creamy texture and flavour to dishes. The correct cream must be used for specific tasks because different types of cream have different properties – for instance single and clotted creams cannot be whisked for pipping whereas whipping and double cream will aerate when whisked.

How should cream be stored:

All fresh cream must be stored in a refrigerator at 5°C. sterilised/long life/ UHT cream has a long shelf life and can be stored, unopened, in a kitchen cupboard. However once opened this cream must be treated the same as fresh cream.

Butter is made from the fat found in the cream.

Cheese can be described as a solid or semi-solid form of milk. It is sometimes referred to as a fermented dairy food. It is made from cows', ewes', goats' or buffalo milk.

Uses of Cheese

Cheese can be used to make both sweet and savory dishes.

- ✓ Cheese can:
 - ✓ provide flavour (e.g. when making a white sauce adding cheese gives improved flavour)
 - ✓ provide colour (e.g. when sprinkled on top of dishes and grilled or baked it will turn an attractive brown colour)
 - ✓ provide texture (e.g. when melted in can provide a soft, moist and stringy texture)
 - ✓ increase the nutritional value of a dish (e.g. when sprinkled on top of a baked potato, it will provide additional nutrients such as protein, fat, calcium and vitamins).

Yoghurt is made from milk. It is made by adding harmless edible bacteria to the milk, which causes it to ferment. This means the carbohydrate (sugar) in the milk, which is lactose, is converted into lactic acid by the bacteria. The lactic acid will set the milk's protein, which will thicken it. The lactic acid will also give the yoghurt its characteristically tangy flavour.

Different yoghurts can be made from different types of milk. Some yoghurt will include additional ingredients such as sugar, which is used to sweeten it (e.g. fruit and other flavours such as honey or vanilla).

Examples of types of yoghurt:

- Set yoghurt: is set in the pot in which it is sold. Has a firmer texture than other yoghurts.
- Live yoghurt: this has been fermented with live culture bacteria that are still living.
- Greek (strained) yoghurt: made from cows' or ewes' milk. It can be quite a thick yoghurt and is higher in fat.

Nutritive value of yoghurt

Yoghurt will provide the following nutrients:

Protein (high biological value).

Fat – this will vary according to the type of yoghurt. Some are made with whole milk which has a higher fat content; others are fat-free.

Calcium – a good source is provided by the milk.

Carbohydrates – in the form of lactose (sugar).

Vitamins B and some **A** and **D** (and **E** if it is a whole milk yoghurt).

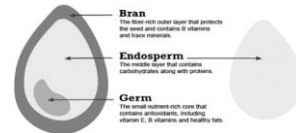
Water – yoghurt has a high water content.

Storage of yoghurt - Store in the refrigerator between 1 and 5°C. Use before the use-by date.

Commodities: Cereals, Fruit & Vegetables

- A 'wholegrain' is made up of three elements:
 - ✓ a fibre-rich outer layer – the bran
 - ✓ a nutrient-packed inner part – the germ
 - ✓ a central starchy part – the endosperm.

Whole Grain vs. "White" Grain



Cereals provide a valuable source of energy in the diet, as well as other nutrients if the wholegrain is used. These include:

- Fibre
- Protein
- Carbohydrates
- Vitamin E
- B vitamins
- Fat
- Iron

How cereals are processed:

Processing the flour after milling
After the milling process, different grades of flour are produced by sifting, separating and regrinding the flour several times. These grades are combined as needed to produce different types of flour.

Small amounts of bleaching agents (to make the flour white) and oxidizing agents (to enhance the baking quality of the flour) are usually added to the flour after milling. Nutrients calcium, iron and B group vitamins are added to. This is called fortification. Baking powder will be added to make self-raising flour.

Flour
Flour comes from different types of cereals, e.g. rye and wheat.

Wheat flour is one of the main flours produced. There are different strengths of wheat flour depending on its uses:

Strong flour is used in bread making and comes from winter wheat, which is a hard wheat.

Weak flour is used in cake and biscuit making and comes from spring wheat.

Wholemeal flour is made from the whole wheat grain, nothing is added or taken away. It is referred to as having 100% extraction rate. It is a good source of dietary fibre.

Brown flour usually contains about 85% of the original grain. Some bran and germ have been removed.

White flour usually contains around 70-72% of the wheat grain. Most of the bran and wheat germ have been removed during the milling process.

Granary flour is made by adding malted wheat (which has been toasted and flaked), to any type of flour but usually it is added to wholemeal or brown flour.

Stoneground flour is wholemeal flour taken in a traditional way between two stones.

Organic flour is made from grain that has been grown to organic standards. Growers and millers must be registered and are subject to regular inspections.

Pasta is made from strong wheat known as durum wheat. This type of wheat contains more protein than common wheat. During the milling process the wheat produces semolina. This is the coarsest grade of the starchy endosperm. To make pasta, water is added to form a dough, which can be shaped or extruded (forced through an opening in a shaped plate and then cut to a specific size) to produce the type of pasta required.

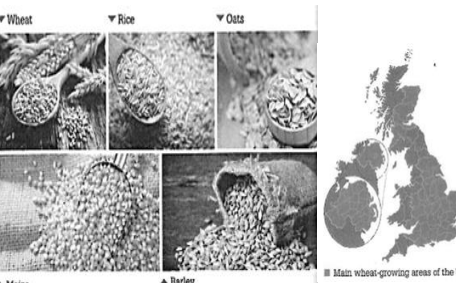
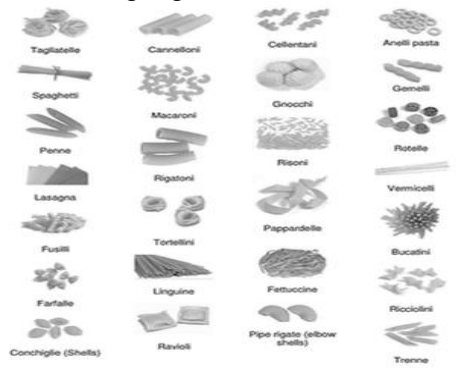
Other ingredients that can be added during the making of the pasta dough include eggs, oil, salt and various flavourings.

- Different shapes, sizes and styles of pasta are widely available to buy in shops. Various colours of pasta are also sold:
- **Green pasta** is made using spinach, which provides the colour as well as some flavour.
- **Red pasta** is made using tomato paste.
- **Squid ink pasta** or **black pasta** is dark grey, almost black in colour and is made using, as the name suggests, squid ink. This can sometimes give the pasta a mild seafood flavour.

Storage of pasta

Dried pasta is popular due to its long shelf life and versatility. It can be combined with many other ingredients. When dried pasta is cooked it changes to a lighter colour and increases in size as it absorbs the cooking liquid.

- Dried, uncooked pasta can be stored in its original packaging, once opened, store in an airtight container in a cool, dry place away from strong odours.
- Fresh pasta must be stored in a refrigerator.
- Homemade pasta must be allowed to dry and then stored in an airtight container in the refrigerator.
- Fresh and homemade pasta can be frozen
- Cooked pasta should be stored in an airtight container in the refrigerator. Rinsing with cold water after cooking will stop it sticking together.



There are more than 42,000 varieties of cultivated rice (the grass species *Oryza sativa*) said to exist. But the exact figure is uncertain. Over 30,000 samples of cultivated rice and wild species are stored at the International Rice Gene Bank and kept safe by researchers all over the world.

The rice varieties can be divided into 2 basic groups, Long grain and all purpose / specialty.

long grain | all purpose

All purpose long grain rice are imported mainly from the USA, Italy, Spain, Bahrain, Guyana and Thailand and can be used for all styles of cooking. All one long grain rice was reported from India and was called *pinna* after the *Pinna* in which it grew. Today most of the long grain rice is imported into the UK from America. Long grain rice is a soft grain which is 4-5 times as long as it is wide. When it is harvested it is known as 'rough' or 'paddy' rice. It undergoes different milling techniques to give different types of rice.

regular long grain white rice

One of the most popular types of rice because it has a subtle flavour which perfectly complements both rich and delicate sauces. Mild in taste from the fresh endosperm, the grain is thin and soft, it is long as long as it is wide. On cooking the grains separate to give an attractive fluffy effect. Extremely versatile and is used for countless international savoury dishes. It is also an essential in Chinese Cooking.

basmati rice

A very long, slender grained aromatic rice grown mainly in the foothills of the Himalayas in India and Pakistan. Sometimes described as the 'Queen of Rice' it has a fragrant flavour and aroma and is the rice used in Indian cuisine. The grain separates and fluffs when cooked. It is often considered to be the best rice to cook. It enhances the grain's aromatic properties. Long grain basmati and brown rice basmati are also available. Brown basmati has a higher fibre content and an even stronger aroma than white basmati. Cooked with Chinese food and South Asian food.

jasmine rice (Thai fragrant rice)

Another aromatic rice, although its flavour is slightly less pronounced than basmati. It originates from Thailand. The length and architecture of the grains suggest that they should remain separate on cooking but it differs from other long grain rice in that it has a soft and slightly sticky texture when cooked. Cooked with Chinese food and South Asian food.

american aromatics

The American rice industry has developed varieties of aromatic rice which mimic both basmati and japonica. These grains look like a grain rice. These varieties are not generally available in the UK.

speciality

These include the aromatic, multi, purple and pudding rice which are particularly suited to ethnic cuisines. These are often grown, cooked and eaten in the same location. Many rice varieties have been named to geographical regions around the world.

the aromatics

The first class of rice which is classed as speciality is aromatic rice. These contain a natural ingredient, 2-acetyl-1-propanol, which is responsible for the fragrant taste and aroma. The fragrance quality of aromatic rice can differ from one year's harvest to the next, like wine. The best aromatic rice are aged to bring out a stronger aroma.

easy-cook long grain white rice (parboiled / converted / pre-fluffed)

This variety has a slightly larger flavour. Unlike regular white rice which is milled direct from the field, it is steamed under pressure before milling. This process hardens the grain, reducing the possibility of over-cooking. It also helps to retain much of the natural vitamin and mineral content present in the milled layers. When rice is parboiled it has a golden colour, but turns white upon cooking. Can be used in the same dishes as regular long grain, but is particularly good for one salads.

brown long grain rice (wholegrain rice)

This rice has a distinctly nutty flavour. Brown flour undergoes only minimal milling, which removes the husk but retains the bran layer. Due to this the rice retains more vitamins, minerals and fibre content than regular or easy cook white rice. The grains remain separate when cooked, but long grain white, but take longer to soften. The cooked grains have a chewy texture, which many people enjoy. It is also available in easy cook form.

japonica rice

Short and medium grain. Grown mainly in California. It comes in a variety of colours including red, brown and black. It is used in Japanese and Caribbean cuisines due to its characteristic sticky moist and tender texture.

Rice is one of the most popular staple foods eaten by the world's population. It is a very versatile commodity because it can be used to make both sweet and savoury dishes.

Rice is served as part of a meal to provide bulk and a feeling of fullness. It is quick to cook and is a good store cupboard ingredient as it has a long shelf life and is easy to store.

Rice can be quite bland in flavour. This can be improved by cooking it with flavoursome ingredients such as garlic and herbs, or by cooking the rice in stock instead of water. It can also provide a balanced taste to a meal if it is being served with strong or spicy flavoured dishes such as a curry or chill-style dishes.

Cooking methods for rice: You can cook rice using different cooking methods:

- Boiling on the hob
- Baking in the oven
- Stir-frying once cooked
- Cooked in a rice cooker

Harvesting rice:
When rice is harvested the grains are covered in a thick outer husk. This is removed during processing.

Varieties of rice:
There are many different varieties of rice available in supermarkets and it is sold in a variety of different forms, for example boil-in-the-bag, easy cook and pre-cooked. Rice can be short grain or long grain and most types are available as brown or white rice. Some of the different varieties of rice and their uses are in the table opposite:

Nutritive value of rice:
Rice is regarded as the poorest of all cereal foods in relation to its protein, fat and mineral content, but is an excellent source of energy.

- Storage of rice:** To store uncooked rice:
- Store in a cool, dry area.
 - Once opened store in an airtight container
 - It is recommended that cooked rice should not be stored and reheated as this can lead to food poisoning. Once cooked, rice becomes a high risk food. If it is necessary to store cooked rice:
 - Store above 65°C for no longer than two hours.
 - Rinse in cold water immediately after cooking, chill and refrigerate.

Fruits and Vegetables

Types of Fruits

Stoned

These include apricots, cherries, damsons, greengages, nectarines, peaches, plums.

Citrus

These include clementine, grapefruit, kumquats, lemons, limes, mandarins, pomelo, oranges, tangerines.

Hard

These include apples, pears, quince

Soft berry

These include blackberries, blueberries, bilberries, cranberries, gooseberries, raspberries, strawberries

Dried fruit

These include banana, pineapple, prunes, figs, raisins, currants, sultanas, apricots

Tropical

These include acerola, cape gooseberries, jack fruit, avocado, water melon, guava, dragon fruit, lychee, mango, passion fruit, tamarind, coconut

Miscellaneous

These include banana, dates, passion fruit, figs, grapes, guavas, kiwi fruit, mangoes, melons, lychees, Sharon fruit, pineapple, pomegranate

Nuts

These include Brazil, cashew, peanut, almond, walnut, hazelnut, pecan, pistachio macadamia.

Types of Vegetables

Root

These include beetroot, carrots, celeriac, parsnips, radishes, swede, turnips, cassava, galangal

Rubers

These include potato, sweet potato, Jerusalem artichokes

Bulbs

These include onions, leeks, shallots, garlic, fennel

Flower heads

These include broccoli, cauliflower, brassica, Brussels sprouts, cabbage, kale, Chinese cabbage, pak choi

Sea vegetables

These include kelp, nori, samphire, agar-agar

Stems

These include asparagus, celery, rhubarb, chicory, globe artichokes, kohlrabi, sea kale, endives

Fungi

These include mushrooms (chestnut, chanterelle, shiitake, oyster, morels, ceps, portabello, open)

Seeds and Pods

These include beans, peas, lentils, runner beans, bean sprouts, okra, sweetcorn, sugar snap peas, mange tout

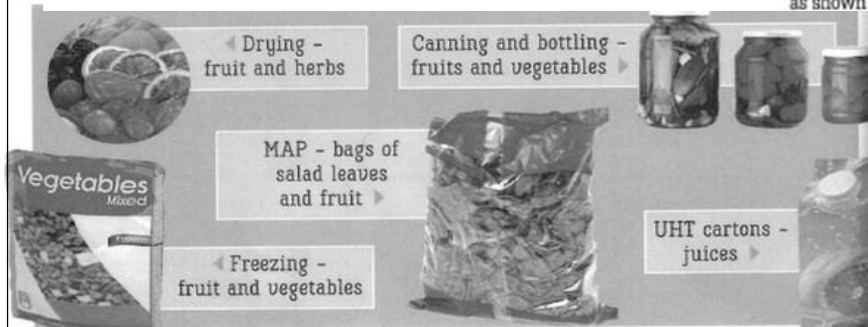
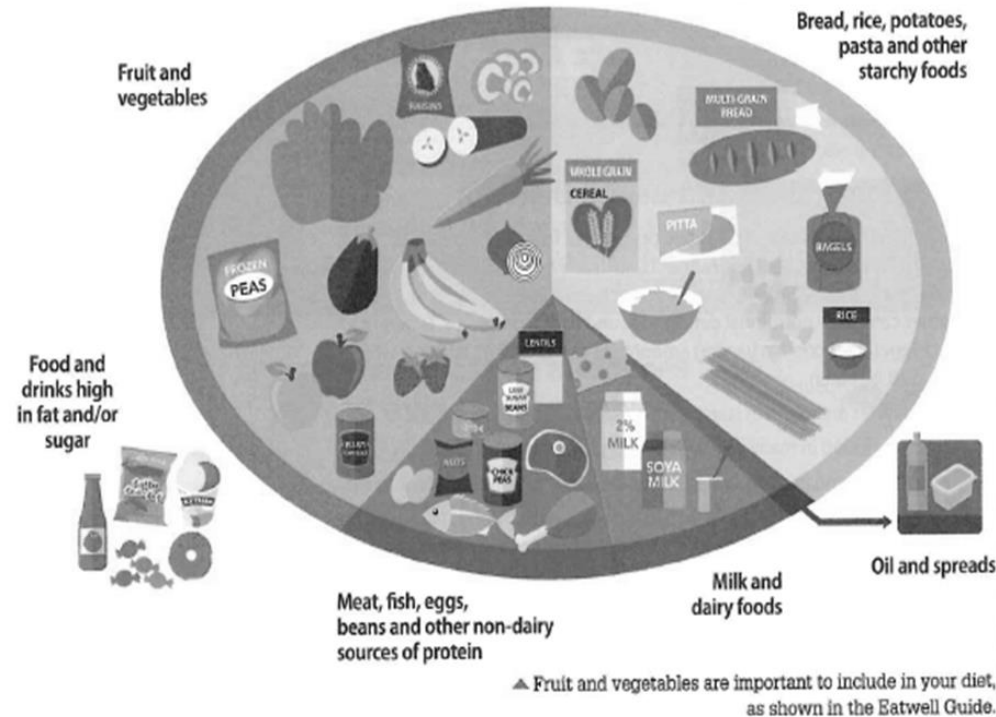
Leaves

These include cabbage, Brussels sprouts, lettuce, spinach, watercress, pak choi, kale

Vegetable fruits

These include aubergines, tomatoes, courgettes, marrow, peppers, pumpkin, squash, avocado, cucumber

Organically produced. All fruit and vegetables can be organically produced, that is grown using natural fertilizers and pesticide. They can also be locally sourced.



There are a few rules to remember when cooking fruit and vegetables:

- 1 Vegetables grown **IN** the ground such as potatoes should be submerged in water for cooking and often need a longer cooking time.
- 2 Vegetables grown **ABOVE** the ground – the stems and leaves – should be cooked in the **minimum** amount of water for the least amount of time.
- 3 Where possible, cook fruit and vegetables in their skins to preserve vitamins and add dietary fibre/NSP.
- 4 Consider which method of cooking to use, for example steaming preserves many water-soluble vitamins whereas boiled vegetables can have vitamin loss.
- 5 Serve cooked fruit and vegetables immediately to maintain the vitamins.
- 6 Never use bicarb when cooking vegetables because the vitamins will be destroyed.
- 7 Overcooked fruit and vegetables look dull, are very soft and will have lost nutrients.

Potatoes

There are many different varieties of potatoes grown in the UK. Some examples of these include Maris Piper, King Edward and Desiree. Sweet potatoes are also a popular choice as an alternative to traditional potatoes.

The part of the potato plant we eat is called the tuber. Potato tubers can come in a variety of colours; we are most familiar with red and white potatoes. When we make a choice between a red or white potato it is often related to the taste and the type of recipe being prepared.

Cooking methods for potatoes:

The variety of the potato used when preparing meals and dishes can result in a variety of different textures and outcomes. Cooked potatoes can be floury, sticky or waxy and granular: this is due to the potato cell changing during the cooking process. All different varieties of potatoes have the same structure. Outer layer is the skin. The flesh is the area under the skin. The pith is the watery core, the innermost part. Potatoes are regarded as a traditional staple food. In the UK, they are often eaten as the main accompaniment to dishes. They can be prepared and cooked in a variety of ways: baked, roasted, fried, boiled and steamed.

Storage of potatoes

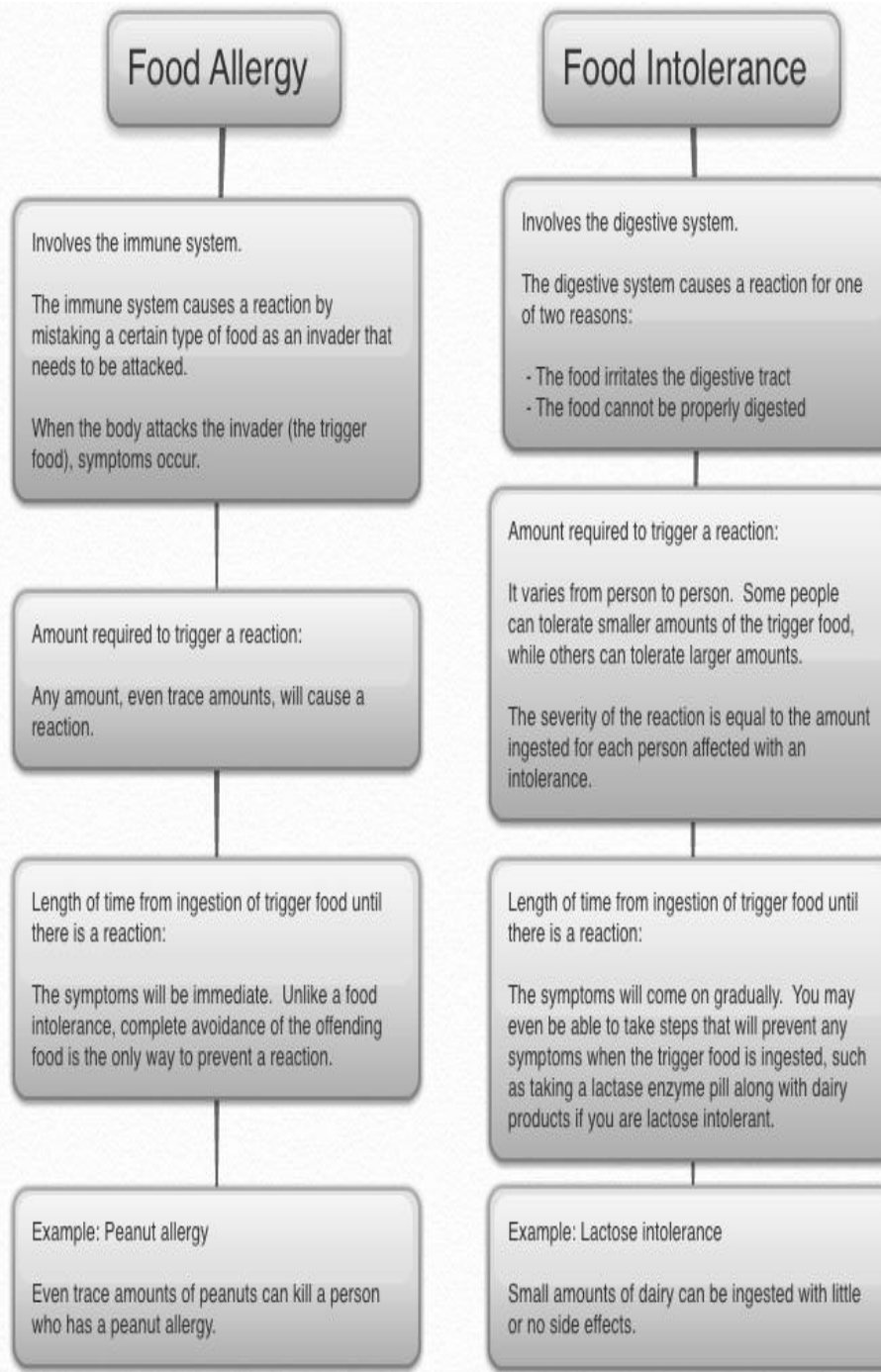
- Potatoes can be stored in hessian bags, paper bags or in racks. They should be stored in a cool, dry, dark, airy place.
- Storing potatoes in a light environment can cause them to turn green. This should be removed before cooking as the green part is toxic.
- Potatoes should not be stored in plastic bags as this can cause them to sweat and rot.
- Storing potatoes in a refrigerator can affect the taste and cause discolouration when they are cooked.

A food allergy involves an immune system response. A food intolerance is a term applied to a range of adverse responses to certain foods and does not involve and immune system response.

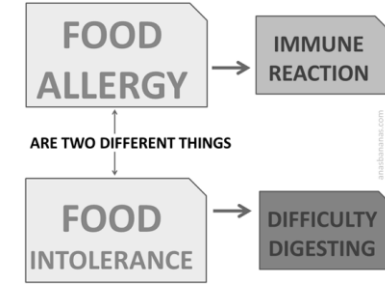
Allergies

Some people are born with, or develop, an allergy, which means they have to avoid or drastically reduce intake of these foods. Allergy to peanuts and tree nuts is the most common food allergy in adults and children. Recent studies have shown that peanut allergy is on the increase. People with nut allergies should avoid foods with peanuts and nuts altogether. Food labels need to be checked carefully for warnings about possible nut traces. Allergic reactions to peanuts include a rash, eczema and vomiting. However, some allergic reactions can be severe, causing a difficulty in breathing due to asthma or throat swelling, or a drop in blood pressure. This is known as anaphylaxis, and can be life-threatening. Other foods which can bring on allergic reactions include eggs and shellfish. All pre-packed foods sold in the UK must clearly state on the label if they contain any of the 14 major food allergens. The food allergens are: peanuts, nuts, eggs, milk, celery, mustard, crustaceans (e.g. crab), molluscs (e.g. oysters), fish, sesame seeds, cereals containing gluten (wheat, barley, rye), soybeans, lupin and sulphur dioxide. Allergens can be written in bold, italics, highlighted, contrasting colour, capitals and underlining on food labels. Allergen cross contamination risk warnings must also be used.

Lactose Intolerance means that a person must avoid cow milk. This can be replaced with other milks such as hazel, hemp, almond, rice or soy milk. Lactose-free products such as cheese are also available. People with lactose intolerance cannot digest the milk sugar (lactose) because of an enzyme deficiency in the body. The body digests lactose using a substance called lactase to break down lactose into two sugars called glucose and galactose, which can then be easily absorbed into the bloodstream. People with lactose intolerance do not produce enough lactase, so lactose stays in the digestive system where it is fermented by bacteria, leading to the production of various gases, causing the symptoms associated with lactose intolerance. Many food contain lactose. Lactose intolerant people should read the labels to check.



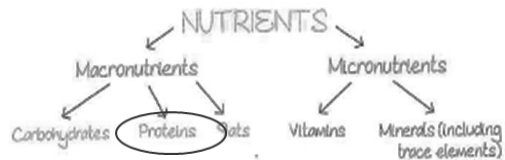
Food Intolerances & Allergies



- GF *gluten free*
- DF *dairy free*
- SF *sugar free*
- V *vegan*
- EF *egg free*
- NF *nut free*

Food Preference	Food Intolerance	Food Allergy
REACTION None to Low	REACTION Mild to Moderate	REACTION Mild to Severe
SYMPTOMS • Bad taste • Annoyance • Dissatisfaction	SYMPTOMS • Immediate or delayed • Feeling sick or ill • Migraine, lethargy, bloating, diarrhea, etc.	SYMPTOMS • Irritated skin or gut • Difficulty breathing • Potentially fatal

Nutrients 1 - Protein



- Protein builds and repairs your body. This macronutrient is vital for growth, repair, maintenance of body cells and the production of enzymes and hormones, and provides energy at 4kcal/17kj per gram.
- Proteins are made from amino acid chains found in animal and vegetable sources.
- Proteins are very large molecules and are made of small units called amino acids
- They are the main component of muscle tissue and organs
- Some amino acids are known as essential amino acids. These are the amino acids that cannot be made by our bodies, so we must eat the proteins that contain them.
- Different amino acids that are joined together in different ways and different numbers to produce different proteins.

Functions of Protein

- Provides all the chemicals to make the body grow, in particularly in children and pregnant women
- Provides all the chemicals to help the body repair any damage after illness, accidents and surgery
- Maintains the body to keep it working well, producing enzymes for digestion, muscle activity, nerve function and hormones, which regulate some body functions
- Provides a secondary source of energy for the body

What happens if we eat too little protein (protein deficiency)

If children have too little protein in their diet they:

- ✓ Stop growing or grow slowly
- ✓ May have thinning hair or hair loss
- ✓ May experience a change in skin colour and become paler
- ✓ Cannot digest food properly and may have diarrhoea
- ✓ Easily catch infections e.g. colds
- ✓ Have low energy levels
- ✓ Lose weight and become thin and weak
- ✓ May have a build-up of fluid under the skin (called oedema)

If adults have too little protein, it will have the following effects:

- ✓ Fat and muscle will be lost from the body
- ✓ Fluid may build up under the skin (oedema)
- ✓ Weight loss will occur
- ✓ Cuts and bruises may be slow to heal
- ✓ A lack of energy
- ✓ Hair and skin becomes dry
- ✓ Infections will be caught more easily

Protein deficiency is rare in the developed world. In a famine or starvation situation, children (in particular) will develop kwashiorkor illustrated by a failure to grow, brittle hair, and pot bellies, due to oedema.

What happens if we eat too much protein?

- ✓ Protein is processed by the kidneys and liver, so too much protein will put a strain on these organs
- ✓ You may put on weight; as extra protein is converted into fat which is then stored in the body

How much protein do we need?

This depends on our age, our lifestyle and our activities.

- ✓ Babies, children and teenagers are still growing and therefore need more protein for this as well doing all the other things in their bodies that require protein
- ✓ Adults still need protein to help their hair and fingernails grow and for the body to repair.
- ✓ Pregnant women need protein to allow their baby to develop, and women who are breastfeeding (lactating) need protein to make their milk.

Guideline Daily Amount Values

Typical values	Women	Men	Children (5-10 years)
Calories	2,000 kcal	2,500 kcal	1,800 kcal
Protein	45 g	55 g	24 g
Carbohydrate	230 g	300g	220 g
Sugars	90 g	120 g	85 g
Fat	70 g	95 g	70 g
Saturates	20 g	30 g	20 g
Fibre	24 g	24 g	15 g
Salt	6 g	6 g	4 g

Protein RNI

Protein reference nutrient intake (RNI) varies according to age and gender. On average, a person aged between 15 and 50 needs about 55g each day and a child aged 4-6 needs 20g daily.

Animal and vegetable proteins

Animal proteins have high biological values (HBVs) and are found in milk, cheese, eggs and fish.

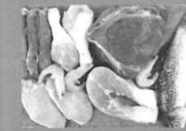
Vegetable proteins have low biological values and are found in seeds, nuts, beans, lentils and grains. The exceptions are soya, tofu and Quorn, which are HBV proteins.

Complementary proteins

Putting two or more LBV proteins together will create dishes that have good amounts of essential amino acids, forming HBV meals, for example beans on toast and hummus with pitta bread.

HBV and **LBV** refer to the number of essential amino acids in foods. HBV animal proteins and soya products contain all the essential amino acids needed in the body. LBV vegetable proteins lack one or more essential amino acid. Adults need eight essential amino acids from foods and children need the same eight plus a further seven from foods.

ANIMAL HBV



Lean meat, poultry and fish



Eggs



Dairy produce such as yoghurt and cheese

VEGETABLE LBV



Seeds and nuts

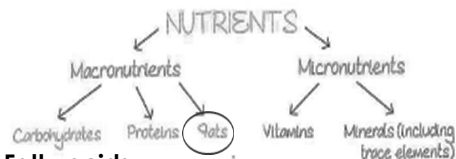


Beans and legumes



Grains

Nutrients 2 – Fats and Oils



Fatty acids

Essential fatty acids are vital for good health and are found in eggs, meat, oily fish and vegetable oils.

Cholesterol

This is a fatty substance that is naturally occurring in the blood. It is made in the body and obtained from fatty foods. Raised cholesterol levels in the blood stream can cause arteries to block. LDL cholesterol is unhealthy and the intake of it should be reduced. HDL cholesterol is a healthier type of fat that helps to reduce the risk of heart attacks and strokes.

Fat RNI

All diets must contain fats – and the RNI is 70g for women and 95g for men. A fat deficiency can mean a lack of vitamins A, D, E, and K, which can lead to night blindness, dry and brittle nails and hair, and depression. The Western diet makes it very difficult to become deficient in fat.

Sources of Fat

Animal sources

- Meat and meat products
- Dairy products, e.g. milk, cheese, butter and cream
- Fish, particularly oily fish like tuna, sardines and salmon

Plant sources

- Avocados and olives
- Nuts and pulses, e.g. peanuts and walnuts
- Seeds such as sesame, sunflower and soya

Fat is needed for:



Insulation and body warmth



Protecting the vital organs (e.g. heart, liver, kidneys and lungs)



Acting as a carrier for the fat soluble vitamins: Vitamin A, D, E and K



Hormone production



Supplying essential fatty acids, which the body is unable to make for itself

How much fat should we eat per day?

- Most people eat too much saturated fat
- A gram of fat provides 9 kcal
- The average man should not eat more than 95g of fat per day, of which not more than 30g should be saturated fat
- The average woman should not eat more than 70g of fat per day, of which not more than 20g should be saturated fat
- A child's diet should aim to have about 35% of total intake of food as fat

What happens if we eat too much or too little fat?

- Weight gain (fat is a high energy source: if we do not use up the energy consumed from fat, it is stored in the body as fat)
- Excess fat may be stored in the liver and may cause health problems
- Increased risk of stroke
- Eating food high in saturated fat can raise blood cholesterol levels and increase the risk of heart disease
- Hydrogenated fats can increase the risk of cancer, diabetes, obesity and bone problems

What happens if we eat too much or too little fat?

- If babies and children lack essential fatty acids their normal growth will be affected
- If we do not get enough energy from fat or carbohydrate, we will use up our fat stores and become thinner
- We may feel colder

Reducing fat in the diet

- ✓ Choose leaner cuts of meat and check for the fat content of minced beef
- ✓ Grill, bake and steam rather than frying foods
- ✓ Trim excess fat from meat
- ✓ Choose low-fat versions of spreads and dairy foods.
- ✓ Reduce the amount of butter or margarine you spread on bread
- ✓ Use alternatives to high fat mayonnaise for salad dressings
- ✓ Buy canned fish, like tuna and salmon, in brine rather than oil

Composition of fats

All fat molecules contain carbon, hydrogen and oxygen, but how the molecules are arranged will determine what type of fat it is.

Saturated fat

Saturated fats have all the carbon atoms in each molecule joined (saturated) with hydrogen atoms. These are found mainly in animal fats and are linked with raised low density lipoproteins (LDL) cholesterol levels associated with coronary heart disease. Examples are butter, ghee, cream, cheese and meat fat.

Monounsaturated fat

This has one carbon atom in each molecule joined to one other carbon atom, forming a double bond. The double bond blocks any hydrogen molecule from joining the two carbon atoms. This fat helps to reduce LDL blood cholesterol and increase high density lipoprotein (HDL) cholesterol. Examples include avocado and olive oil.

Polyunsaturated fat

This is where several carbon atoms form double bonds, thus reducing the hydrogen atoms available in the molecule. This provides HDL cholesterol and is a good source of omega 3 and omega 6 fatty acids. Examples are sunflower, soya beans, and oily fish.

Trans-fatty acids are found in fried foods, commercial baked goods, processed foods and margarine



Visible and invisible fats

Visible fats can be seen, such as butter, margarine and the white fat on meat.

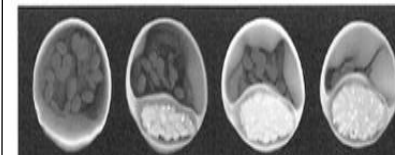


Invisible fats can't be seen in products such as milk, cream, nuts, avocados and many ready-made meals.

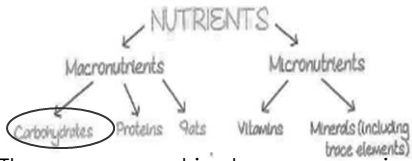


Fat and health problems

Eating too many fats and fatty foods causes a range of health problems, including weight gain, obesity, type 2 diabetes, blocked arteries leading to coronary heart disease, stroke and some cancers. Accepted advice is to reduce total fat intake, and eat mainly unsaturated fats.



Nutrients 3 - Carbohydrates



These macronutrients are our main source of energy at 3.75kcal/16kj per gram. During digestion, carbohydrates are broken down into glucose, which is then absorbed into the blood. The pancreas produces insulin, allowing glucose to enter body cells to produce energy. Some carbohydrates help rid the body of waste material (in the form of faeces).

Types of carbohydrates

Starch (complex carbohydrate) gives slow-release energy, keeping us feeling fuller for longer.

Sugar (simple sugars) release glucose very quickly, giving us a short burst of energy. Lots of factory-made foods are high in "hidden" sugars.

Functions/Uses of Carbohydrates in the diet

- Provide the body with energy for physical activity.
- Provide the body with energy for maintaining body functions.
- Provide the body with fibre (NSP) to help digestion.
- Sweeten and flavour foods.

Carbohydrate RNI

The amount of carbohydrate needed depends on a person's:

Fibre/NSP

- This is the non-digestible part of plant cell walls called cellulose.
- It cannot be digested by our bodies, so passes straight through the digestive system, providing bulk in the diet and helping to move the waste food through the system, preventing constipation and cleaning the walls of the digestive system to remove bacteria.

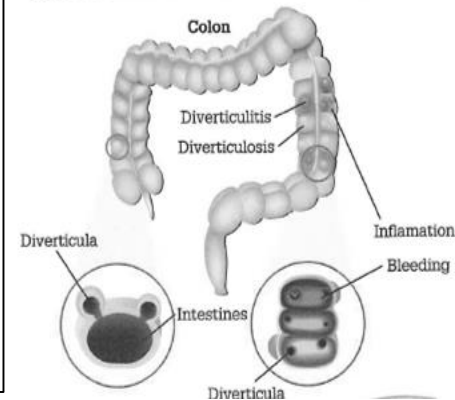
Functions of NSP:

- Holds water and keeps faeces soft and bulky.
- Helps prevent bowel disorders including constipation, bowel cancer, diverticular disease and haemorrhoids (piles).
- Can help with weight control as high fibre foods are filling, but as the fibre is not digested. It is not broken down to provide energy or calories.
- High fibre diets have been shown to help lower blood cholesterol.

What happens if we eat too much or too little carbohydrate?

Too Much	Too Little
The excess will be converted into fat and stored in the body. This leads to a gain in weight	The body will use up the energy stores it has, so a person may lose weight
The consumption of too much sugar can result in tooth decay	The body will also use some of the protein eaten as a secondary energy source

WHAT ARE DIVERTICULOSIS and DIVERTICULITIS?



Dietary fibre/NSP

The non-starch polysaccharide (NSP) type of carbohydrate comes from all plant cells, skins and seeds. Insoluble fibre, found in wholegrains, nuts, and many fruit and vegetables, travels through the digestive system, without being digested. It is needed to absorb water and bulk out the faeces (poo), making it softer and easier to pass. It keeps the colon and bowel healthy, preventing piles, diverticulosis, diverticulitis and some cancers.

Soluble fibre, found in oats, peas, beans, carrots and apples, is digested, helping lower blood sugar cholesterol. A diet high in fibre keeps us feeling fuller for longer and should stop people from snacking and help to maintain a healthy weight, fibre also helps to control our blood sugar levels, which is very important for diabetics.



Nutrients 4 – vitamins and minerals

Why do we need vitamins?

These micronutrients are essential in very small quantities. They are measured in units of milligrams (mg) or even smaller micrograms (µg). The body needs a wide range of vitamins to function properly and for good health. Each vitamin has specific jobs, but in general, they:

- release energy
- Prevent some diseases
- Assist in cell function and repair.

Fat soluble vitamins

Vitamins A, D, E and K are found in fats and foods naturally containing fats and oils. These vitamins can be stored in the liver and fat reserves for later use. Eating too much of these causes the body harm.

Water soluble vitamins

- The B group of vitamins and vitamin C cannot be stored in the body so must be eaten every day. Any excess of these vitamins is flushed out in urine.
- They are easily destroyed by heat, water and exposure to air during storage, preparation and cooking, so don't prepare them until you need them. Cook them in the smallest amount of water possible for the shortest amount of time.
- Steaming rather than boiling vegetables will preserve water soluble vitamins and any cooking liquid could be used in sauces and gravy.
- The best way to get these vitamins is to eat fruit and vegetables raw.

Vitamin	Fat-soluble / Water-soluble	Food sources	Why is it needed?	Not enough of it?	Too much of it?
A (Retinol)	Fat-soluble	Liver, fish liver oils, eggs, milk, butter, cheese Leafy green vegetables, orange and yellow vegetables, tomatoes, fruits (these contain beta-carotene, a precursor of vitamin A)	<ul style="list-style-type: none"> • Healthy immune system • Helps us to see in dim light 	<ul style="list-style-type: none"> • Rare, but can cause night blindness and stunted growth in children. 	<ul style="list-style-type: none"> • Fractures in old age • Pregnant women eating too much can cause birth defects.
B1 (Thiamin)	Water-soluble	Liver, pork, wholegrains, legumes, nuts, sunflower seeds, fruits, vegetables	<ul style="list-style-type: none"> • Releasing energy from food • Nervous system • Growth in children 	<ul style="list-style-type: none"> • Muscle wastage; dry and sore skin • Some anaemias 	<ul style="list-style-type: none"> • Unlikely as flushed out in urine
B2 (Riboflavin)	Water-soluble	Liver, kidney, eggs, milk, rice, legumes, wholegrains, green vegetables			
B3 (Niacin)	Water-soluble	Fish, poultry, meat, milk, wholegrains			
B5 (Pantothenic acid)	Water-soluble	Liver, kidney, eggs, wholegrains, fortified breakfast cereals			
B6 (Pyridoxine)	Water-soluble	Meat, fish, wholegrains, vegetables			
B9 (Folic Acid)	Water-soluble	Liver, legumes, leafy green vegetables, wholegrains, yeast extract			
B12 (Cobalamin)	Water-soluble	Meat, poultry, liver, kidney, fish, eggs, dairy products			
C (Ascorbic Acid)	Water-soluble	Citrus fruits, bell peppers, strawberries, broccoli	<ul style="list-style-type: none"> • Collagen formation • Wound healing • Helps absorption of iron 	<ul style="list-style-type: none"> • Bleeding gums; wounds not healing • Anaemia if not enough iron is absorbed 	<ul style="list-style-type: none"> • Excess is flushed out in urine
D (Calciferol)	Fat-soluble	Oily fish, fish liver oils, egg yolk, dairy products	<ul style="list-style-type: none"> • Formation of bones and teeth • Controls calcium absorption 	<ul style="list-style-type: none"> • Rickets (in children) and osteomalacia (in adults) • Heart failure 	<ul style="list-style-type: none"> • Kidney damage
E (Alpha-Tocopherol)	Fat-soluble	Nuts, seeds, vegetable oils, wheat germ	<ul style="list-style-type: none"> • Antioxidant to prevent disease • Healthy skin and eyes 	<ul style="list-style-type: none"> • Deficiency is unlikely 	<ul style="list-style-type: none"> • Affects blood coagulation
K	Fat-soluble	Leafy green vegetables, rapeseed and soya bean oil, natto, wholegrain cereals	<ul style="list-style-type: none"> • Blood clotting; wound healing • Good bone health 	<ul style="list-style-type: none"> • Deficiency is unlikely 	<ul style="list-style-type: none"> • Stored in the liver

Nutrients 4 – vitamins and minerals

Why do we need minerals?

These micronutrients are essential in very small quantities. They are measured in units of milligrams (mg) or even smaller micrograms (μg). They are found in most foods. The three minerals you need to really know and understand are:

- Calcium
- Iron
- Sodium

Mineral	Food sources	Why is it needed?	Not enough of it?	Too much of it?
Calcium	Milk and milk products; canned fish with bones (salmon, sardines); fortified tofu and fortified soy beverage; greens (broccoli, mustard greens); legumes	Important for healthy bones and teeth; helps muscles relax and contract; important in nerve functioning, blood clotting, blood pressure regulation, immune system health	<ul style="list-style-type: none"> • Rickets in children • Osteomalacia in adults • Osteoporosis 	<ul style="list-style-type: none"> • A build-up in the kidneys can be fatal
Iron	Organ meats; red meats; fish; poultry; shellfish (especially clams); egg yolks; legumes; dried fruits; dark, leafy greens; iron-enriched breads and cereals; and fortified cereals	Part of a molecule (hemoglobin) found in red blood cells that carries oxygen in the body; needed for energy metabolism	<ul style="list-style-type: none"> • Anaemia – tired lethargic and very pale eye margins 	<ul style="list-style-type: none"> • Constipation and nausea
Sodium	Table salt, soy sauce; large amounts in processed foods; small amounts in milk, breads, vegetables, and unprocessed meats	Needed for proper fluid balance, nerve transmission, and muscle contraction	<ul style="list-style-type: none"> • Rare 	<ul style="list-style-type: none"> • High blood pressure and strokes

Other minerals:

Potassium is needed for healthy blood pressure, to balance body fluids and to prevent cramps. It is found in fruit, vegetables, beans, nuts and seeds.

Phosphorous works with calcium to form strong bones and teeth. It is found in red meat, dairy foods and bread.

Magnesium helps bone development and the nervous system. It is found in meat fish and dairy foods.

RNI

The RNI of each mineral depends on a person's age, sex and general health. A deficiency always causes serious problems. Sodium (salt) causes a major health issue in the UK because people regularly eat more than the recommended 6g of salt a day, resulting in high blood pressure and leading to strokes.

Water

Water is not a nutrient but it is essential for life because it:

- regulates body temperature
- Transports nutrients in the blood
- Removes waste from cells
- Aids digestion

We obtain water from all drinks and foods we eat. A lack of water causes dehydration, resulting in headaches, thirst, dizziness and poor concentration.



How nutrients work together

Some nutrients rely on each other to improve absorption.

Vitamin C+Iron: when you eat iron-rich plant sources, add a vitamin C-rich food to the dish to increase the iron absorption; for example, blueberries with breakfast cereal or tomatoes in a bean salad.

Vitamin D+Calcium: you may eat lots of calcium-rich foods but if vitamin D is missing, the calcium can't be absorbed and you may suffer with calcium deficiency. To improve this, eat a yoghurt while sitting outside in the sun, or a tuna sandwich with a glass of milk.

Trace elements: a healthy, balanced diet ensure that iodine, zinc, fluoride and selenium trace elements are easily accessed.



To Kill A Mockingbird	Context	Key Characters
<p>Harper Lee was born in Monroeville, Alabama, in 1926. Like Jem and Scout, her father was a lawyer. She studied at the University of Alabama and worked in New York. There she began work on <i>To Kill a Mockingbird</i>, in the mid 1950s. It was completed in 1957 and published in 1960 - just before the black civil rights movement in America really took.</p>	<p>Scout Finch</p>	<p>The narrator and protagonist of the story. Jean Louise "Scout" Finch. She is intelligent and is considered as a tomboy in the context of where/when she grew up. She believes in the goodness around her, although this is tested at times. The novel tracks her maturing to be able to see innate nature of good and evil in humanity.</p>
<p>The Wall Street Crash and the Great Depression in America: When the Wall Street stock market crashed in October 1929, the world economy was plunged into the Great Depression. By the winter of 1932, America was in the depths of the greatest economic depression in its history. The number of unemployed people reached upwards of 13 million. Many people lived in deprived conditions close to famine and many had to move to shacks.</p>	<p>Jem Finch</p>	<p>Scout's brother and constant playmate at the beginning of the story.</p>
<p>American Slavery: Black people were originally brought from Africa to America during the 17th, 18th and 19th centuries. They were forcibly transported across the Atlantic in slave ships (in which many died) and sold as slaves to work on sugar and cotton plantations in the Caribbean and the southern states of north America. They had no rights and were seen by their white owners as little more than animals or machines. Even after the abolition of slavery in 1865, the blacks were still almost powerless. The whites had too much to lose to allow blacks any rights. Nothing was equal: blacks had the worst of everything while whites had the best.</p>	<p>Atticus Finch</p>	<p>Scout and Jem's father, a lawyer in Maycomb. He represents Tom during the trial, despite backlash and anger – he shows that he is committed to equality. He is a widower and is descended from an old local family. He acts as a moral compass throughout the novel and tries to instill a sense of morality in his family.</p>
<p>Segregation in 1930s America: In the 1930s, although 50% of the population of Southern towns were black, they had no vote and could not marry whites. The policy of segregation meant that blacks had to have their own schools, their own churches, their own football teams, even their own cemeteries.</p>	<p>Arthur 'Boo' Radley</p>	<p>A recluse, he is one of the novel's "mockingbirds," a good person injured by the evil of humankind.</p>
<p>The Scottsboro Case: In 1931, nine young black men were accused of raping two white women on a train. After a series of bitter trials, four of the men were sentenced to long prison sentences - even though prominent lawyers argued that the accusations were false. It was later discovered that the women were lying.</p>	<p>Bob Ewell</p>	<p>A drunken man, he wrongfully accused Tom Robinson of raping his daughter; Ewell represents the dark side of the South</p>
<p>Key themes</p>	<p>Tom Robinson</p>	<p>The black man accused of rape, one of the novel's "mockingbirds," an important symbol of innocence destroyed by evil.</p>
<p>SOCIAL INEQUALITY: discrimination and racial prejudice run rife in Maycomb county, whilst only a couple of characters (such as Atticus) are committed to social equality. The social hierarchy perplexes the children who cannot fathom why everyone seems so keen to segment and despise each other. These social divisions are irrational and they can be particularly harmful and destructive to the community.</p> <p>MORAL EDUCATION: as a bildungsroman novel, the story tracks the moral development of Scout and Jem. Atticus is committed to ensuring that his children have a strong social conscience and acts as their moral compass throughout the novel. He teaches them to be kind to everyone and not to join in with the neighbourhood rumours and gossip mongering about Boo Radley. He also defends Tom Robinson, a black man, which many people in Maycomb found to be controversial, but Atticus just wants to do what is morally right and lead a good example for his children.</p> <p>GOOD AND EVIL: To begin with, Jem and Scout appear to assume that everyone around them is inherently good – they haven't really been exposed to evil – this is reflective of their young age and their sense of innocence in their attitudes to life. However, through events such as the rape case, the children develop a more adult perspective, understanding that evil has far reaching effects and can destroy good, innocent lives to great extents.</p> <p>PREJUDICE: Prejudice permeates Maycomb society. Almost every character is either prejudiced against others, or the victim of prejudice. There is racial prejudice, class prejudice and prejudice against individuals who don't fit in.</p>	<p>Key Quotes</p> <ol style="list-style-type: none"> 1. "Maycomb was an old town, but it was a tired old town when I first knew it." 2. "But it was a time of vague optimism for some of the people; Maycomb County had recently been told that it had nothing to fear but fear itself." 3. "You never really understand a person until you consider things from his point of view . . . until you climb into his skin and walk around in it." 4. "Remember it's a sin to kill a mockingbird." That was the only time I ever heard Atticus say it was a sin to do something" 5. "Your father's right," she said. "Mockingbirds don't do one thing but make music for us to enjoy. . . . but sing their hearts out for us. That's why it's a sin to kill a mockingbird." 6. "When they finally saw him, why he hadn't done any of those things . . . Atticus, he was real nice. . . ." His hands were under my chin, pulling up the cover, tucking it around me. "Most people are, Scout, when you finally see them." 7. "Until I feared I would lose it, I never loved to read. One does not love breathing." 8. "I wanted you to see what real courage is, instead of getting the idea that courage is a man with a gun in his hand. It's when you know you're licked before you begin, but you begin anyway and see it through no matter what." 9. "People generally see what they look for, and hear what they listen for." 10. "The one thing that doesn't abide by majority rule is a person's conscience." 	

<p>PART ONE Chapter 1: Scout Finch recounts the events that led to her brother Jem's broken arm many years earlier. She tells of how her father (Atticus) broke from the Finch's farming background to become a successful lawyer. Alongside Atticus, Scout also lives with her older brother Jem and their cook Calpurnia, Maycomb – a tired town in the grips of The Great Depression. A boy called Dill moved into the neighbourhood for the summer, who they befriended. Together, they all try to lure the mysterious Boo Radley out of his house. There are lots of rumours about Boo and his family.</p>	<p>Foreshadowing: a clue, hint or warning about something which will happen in the future/ later in the text</p>
<p>Chapters 2-3: Scout goes to school for the first time, but does not get on well with her teacher, Miss Caroline. When Miss Caroline lends Walter money, Scout protests that she won't get it back (The Cunninghams are a poor family) Scout's hand is slapped with a ruler. To smooth things, Jem invites Walter over for dinner, where Calpurnia scolds Scout for being rude to Walter. Back at school, Miss Caroline cries when a 'cootie' crawls out of Burris Ewell's (a poor boy) hair.</p>	<p>Attorney general: top lawyer in a country or state</p>
<p>Chapters 4-6: Scout continues to be frustrated by the slow curriculum at school. Scout & Jem find 'gifts' in knotholes in a Radley tree (chewing gum & pennies). Dill returns in summer Scout spends more time with a neighbour – Miss Maudie. She tells Scout that most of the rumours about Boo are untrue. Jem and Dill try to lure Boo out of the house. They see a shadow of a man and flee, with the sound of a shotgun behind them. Jem becomes stuck and has to shuffle out of his pants. The adults, hearing the noise, suggest Mr Radley has shot 'a Negro' in his yard.</p>	<p>Exposition: a full-fledged and detailed explanation</p>
<p>Chapters 7-8: Scout also dislikes 2nd grade at school. Jem and Scout find other gifts at the Radley house – a ball of twine, two soap dolls resembling themselves, chewing gum, a spelling bee medal, and a pocket watch. Nathan Radley then fills the knothole with cement, he says because 'the tree is dying.' There is a snow day of school, and the children build a snowman of Mr Avery. Atticus is not happy and tells them to disguise it. Miss Maudie's house catches fire, and the neighbours wait outside. A blanket is draped over Scout – it is assumed it must have been Boo.</p>	<p>Motif: a repeated image that helps to convey a theme</p>
<p>Chapters 9-11: Atticus is asked to defend Tom Robinson, a black man, in a rape case. It is a case that he can never hope to win, but he does so for his own sense of morality and justice. Scout gets into a fight at school, and then with her cousin Francis, over them calling Atticus a 'nigger lover'. Chapter 10 tells the reader more about Atticus. He is older than most fathers in the town, and likes to read. However, when a mad dog comes into town one day, Atticus shows that he is a great shot with a rifle – shooting it dead from some distance. In C.11, an old lady called Mrs Dubose is offensive to the Finches about Atticus defending Tom, causing Jem to destroy her camellia bushes. She is a mad old lady, and so Atticus is mad. Jem is made to read to her once a day for a month. When she dies, she leaves Jem a camellia.</p>	<p>Semantic field: a set of words that are related in meaning</p>
<p>Part Two Chapters 12-13: To Scout's disappointment, Dill does not visit Maycomb in the summer, and Jem wants to be more apart from her. Calpurnia takes the children to her 'coloured' church, which is exceptionally poor, yet is collecting donations for the Robinson family. Aunt Alexandra stays for a while, becoming an integral part of Maycomb's social life. She believes that Atticus should teach the children about their ancestry and to be proud of the family name, but he fails in this.</p>	<p>Notorious: famous or well known, typically for some bad quality or deed</p>
<p>Chapters 14-15: Alexandra tells Scout she cannot go back to the coloured church, and tries (unsuccessfully) to convince Atticus to get rid of Calpurnia. Jem and Scout are sent to bed for fighting, where they find Dill, who has run away from home. Atticus places himself in front of the Maycomb jail to prevent a lynch mob from getting to Tom. Scout and Jem jump out and Scout speaks to Mr Cunningham, who is in the mob, about his son. Ashamed, Mr Cunningham gets the mob to leave. Mr Underwood then reveals that he had Atticus 'covered' the whole time with a shotgun at a window. Then he straightened up and waved a big paw.</p>	<p>Vigilante: a person who tries in an unofficial way to prevent crime or to catch someone who has committed a crime, often violently and outside of legal authority</p>
<p>Chapters 16-17: The trial begins. People attend from all over, including Mr Dolphus Raymond, a wealthy man who has a relationship with a black woman. Jem, Scout, and Dill sneak into the courthouse and sit on the balcony. Heck Tate, the sheriff, is the first to be cross-examined. He found Mayella Ewell badly beaten, and Bob told him she was raped by Tom Robinson. No doctor was called, and the bruises were on the right hand side of her face. Bob Ewell is then called to the stand. He states that he saw Tom raping his daughter. Atticus questions why no doctor was called (too expensive and 'no need') and confirms Bob is left-handed (a left-hander would normally bruise the right of someone's face).</p>	<p>Injustice: unfair behaviour or treatment</p>
<p>Chapters 18-19: Mayella is called to testify. She states that she called Tom into the house to break up a dresser, but that once in he took advantage of her. To Atticus, she reveals that she has a drunken father, 7 unhelpful siblings, and no friends. He questions how Tom could have inflicted the bruises, when he has a useless left hand (injured in a childhood accident). She yells at the courtroom that they would be cowards not to convict Tom and refuses to be questioned anymore. Tom is then questioned. He declares that Mayella embraced him, at which point her father appeared at the window. Tom's boss (Link Deas, a white man) confirms Tom is a good man. Link is expelled from the courtroom. The prosecution accuses Tom of lying about everything, which causes Dill to cry. Scout leaves the courtroom with him.</p>	<p>Gothic: related to medieval style, or the horror and mystery depicted in fiction about the 18th and 19th centuries</p>
<p>Chapters 20-22: They encounter Mr Dolphus Raymond. He explains that he pretends to be drunk to give an explanation for his lifestyle – he actually just prefers black people to whites. When they return to the courtroom, Atticus is making his closing comments –citing the prosecution's shaky evidence, Calpurnia comes into the courtroom and informs Atticus that the children have not been home – he sees them and sends them home for supper. The return after supper, and after a long delay, hear the jury return a guilty verdict. Jem is horrified by the guilty verdict, and no longer has faith in the people of Maycomb. The next day, the black population delivers an avalanche of food to the Finch household. The children then hear that Bob Ewell has spat at their father that morning, vowing to seek revenge.</p>	<p>Bildungsroman: a coming of age novel which focuses on the development of the protagonist from youth to adulthood</p>
<p>Chapters 23-25: Bob Ewell's threats are worrisome to everyone except for Atticus himself. Atticus feels that Tom has a chance of acquittal, but if not he will be executed by electric chair. Atticus states that in an Alabama court, they were lucky to get the court to actually deliberate. Jem and Scout then discuss why everyone in town despises each other. One day in August, at Aunt Alexandra's missionary circle, Atticus reveals that Tom has attempted to escape and was shot dead. The missionary circle reconvenes as if nothing is wrong. Mr Underwood writes a long editorial condemning his death, but others think that it is typical for a black man to do something irrational like try to escape.</p>	<p>Didactic: intended to teach a message, particularly in moral instruction</p>
<p>Chapters 26-27: School starts again, and the children pass by the Radley household each day, no longer scared, but still hoping to catch a glimpse of Boo. Teachings at school on the theme of equality frustrate Scout, as the same teachers have been known to be prejudiced against blacks in the town. After Bob Ewell loses a job, everyone connected with the case (Judge Taylor, Helen Robinson, Link Deas) begins to be harassed in some way – e.g. by being followed or seeing shadows lurking around their homes. On Halloween, Jem takes Scout to the school for a school event.</p>	<p>Jim Crow Laws: Racial segregation state and local laws</p>
<p>Chapters 28-31: On the way home from the Halloween event, the children are pursued by a mysterious assailant. Jem tries to protect Scout but is dragged away. Scout hears a crunching sound and Jem screams. As she runs towards him, she is seized. Then her attacker is pulled away. When the noise of the struggle has ceased, she sees a prone man lying in the street and a man carrying Jem back home. The Dr is called - Jem has a broken arm. Heck Tate appears and tells Atticus that the prone man is dead – it is Bob Ewell. As Scout explains what happened, she turns to the rescuer and realises it is Boo Radley. They listen to Heck and Atticus discussing what to do – although Heck knows that Boo killed Ewell, they agree that the story is Ewell fell on his own knife. Scout walks Boo home and then never sees him again.</p>	<p>American Dream: The ideal by which equality of opportunity is available to any American, allowing the highest aspirations and goals to be achieved</p>
	<p>Civil Rights: Rights that protect individuals' freedom from infringement by governments, social organisations, and private individuals</p>
	<p>Segregation: the action or state of setting someone or something apart from others</p>

Structural Features	Definition
Stanza	A 'paragraph' in a poem.
Enjambment	A sentence or phrase that runs onto the next line.
Anaphora	When the first word of a stanza is the same across different stanzas.
Juxtaposition	Two ideas/ images placed together for contrasting effect.
Speaker	The narrator, or person in the poem.
Refrain	A phrase, line or group of lines which is repeated throughout a poem.

Word class	Definition	Example
Verb	A verb is a word or set of words that shows action (<i>runs, is going, has been painting</i>); feeling (<i>loves, envies</i>); or state of being (<i>am, are, is, have been, was, seem</i>)..	The child, <u>to</u> re off the wrapping paper and <u>beamed</u> at her gift. She <u>was</u> elated.
Adverb	An adverb labels how, when or where something happens (and they often end in '-ly').	The dog growled <u>menacingly</u> whenever the bird flew <u>gracefully</u> towards the window.
Noun	Nouns are names, places and things; they also signify imagined things like 'a ghost'; and ideas or concepts, such as 'love', 'guilt' or 'fate'.	There was a flash of <u>hope</u> in his <u>eyes</u> as he looked through the <u>window</u> .
Pronoun	Words used instead of a noun i.e. 'he', 'she', 'they', 'it'.	<u>She</u> was surprised <u>it</u> was happening.
Adjective	An adjective is a describing word or phrase that adds qualities to a noun. It normally comes before a noun, or after verbs like 'am', 'is', 'was', 'appears' or 'seems'.	The <u>ebullient</u> crowd stood together in solidarity.
Preposition	Prepositions are short words and phrases that give information about place, time and manner	The money was hidden <u>under</u> the bed, <u>beside</u> the old duvet, <u>on top of</u> the shoe box.
Intensifier	A word, especially an adverb or adjective, that has little meaning itself but is used to add emphasis to another adjective, verb, or adverb.	He was <u>too</u> dispirited to continue. The contract was <u>very</u> confusing. The card was <u>extremely</u> sentimental.
Minimiser	A word that is used to make another adjective, verb or adverb sound lesser.	She was <u>slightly</u> traumatised. They were <u>just</u> considering it. We were <u>a little</u> rancorous in their response.

Context	Definition
Post colonialism	Postcolonialism is the study of the cultural legacy of colonialism, focusing on the human consequences of the control and exploitation of colonized people and their lands.
Emigration	The act of leaving one's own country to settle permanently in another; moving abroad.
Racial Segregation	Racial segregation is the separation of people into racial or other ethnic groups in daily life. It may apply to activities such as eating in a restaurant, drinking from a water fountain, using a public toilet, attending school etc.
Apartheid	(in South Africa) a policy or system of segregation or discrimination on grounds of race.
Windrush Generation	The Windrush generation refers to the immigrants who were invited to the UK between 1948 and 1971 from Caribbean countries such as Jamaica, Trinidad and Tobago and Barbados. The name derives from the ship MV Empire Windrush, which on June 22, 1948, docked in Tilbury, Essex, bringing nearly 500 Jamaicans to the UK.

Language Techniques	Definition	Example
Symbolism	When an object represents an idea that is much deeper and more significant.	your mother tongue would rot, rot and die in your mouth
Personification	Describing an inanimate object as having human feelings.	Lizard cars cruise by; Their radiators grin.
Metaphor	A descriptive technique that names a person, thing or action as something else.	This is the backbone of Britain
Simile	A descriptive technique that compares one thing with another, usually using 'as' or 'like'.	for my laugh in the mirror shows only my teeth like a snake's bare fangs!
Listing	When the writer includes several words/ phrases/ ideas, one after the other.	I have learned to wear many faces like dresses – homeface, officeface, streetface, hostface, cocktailface,
Repetition	When a word/ phrase is noticeably repeated throughout a sentence/ paragraph/ whole text.	and my hands, and the skin about my bones, and the soft labouring of my lungs
Imagery	A technique in which the author appeals to the senses i.e. seeing, hearing, touching.	Small round hard stones click under my heels,

Twelfth Night Knowledge Organiser

Plot Summary

Act 1: Twins Viola and Sebastian are shipwrecked in Illyria.

Duke Orsino. Viola disguises herself as boy (Cesario) and goes to work for Duke Orsino who is hopelessly in love with Countess Olivia.

Olivia doesn't realise that Cesario is a girl and falls in love with him/her. Maria tells off Sir Toby, Sir Andrew Aguecheek and Feste for their rowdy drunkenness.

Act 2: Malvolio is tricked through love letters which he thinks are from Olivia.

Act 3: Olivia confesses her love for Viola/Cesario. Malvolio appears cross gartered and wearing yellow stockings as required in the letter. Olivia thinks he is mad.

Act 4: Sebastian is mistaken for Viola/Cesario resulting in a fight with Sir Toby and Olivia proposes to him. Malvolio is imprisoned for his madness.

Act 5: The twins are reunited and the mistaken identities are resolved. Orsino proposes to Viola, The crime against Malvolio is revealed.

		Themes	Essential Quotations	Useful Vocabulary
Viola Quick-witted Forthright	Malvolio Puritan Vain Steward	Love	"If Music be the food of love, play on." Duke Orsino A1 Sc1 1.	Verse: Writing using poetic techniques of rhythm and sometimes rhyme. Prose: Written or spoken language in its ordinary form without poetic structure. Iambic pentameter: Verse with 10 syllables and a regular beat of five alternate stresses. 'If music be the food of love, play on.' Assonance: poetic effect of repeated vowel sounds. e.g gold/ hope; Consonance: poetic effect of repeated consonant sounds e.g. killed/cold. Sibilance: poetic effect of repeated 's' sounds. Dramatic irony: The audience know more than the characters on stage. Soliloquy: a speech giving access to a character's thoughts usually when they are alone on the stage. Pun: A word having more than one meaning. Innuendo: a pun with a sexual double meaning. Puritan – A religious person against all drinking, feasting and the theatre. Thee/Thou – You Superior – to have a higher status. Inferior – to be of a lower status
Orsino – The Duke Noble Melancholic Inconsistent	Olivia Mourning Impetuous Heiress		"Make me a willow cabin at your gate And call upon your soul within the house" Viola A1 Sc5	
Sir Toby Belch Drunkard Crude Corrupt	Sir Andrew Aguecheek Foolish Suitor Coward		"Even so quickly one may catch the plague." Olivia Act 1 Scene 5	
Sebastian Identical Separated	Maria Witty Ingenious Servant		"Yet, a barful strife/Where'er I woo, myself would be his wife." Viola Act 1 Scene 4	
Feste – The fool. Shakespeare's fools provide jokes and puns but also comment on the world of the play. Feste can talk to any character and move between both households.		Ambition and social status (Malvolio)	"Madam why delight you in such a barren rascal?" Malvolio A1 Sc5	
			"O you are sick of self-love Malvolio," Olivia A1 Sc5	
			"My masters are you mad?" Malvolio A2 Sc3	
			"Dost thou think because thou art virtuous there shall be no more cakes and ale?" Sir Toby to Malvolio A2 Sc3	
			"Some are born great, some achieve greatness and some have greatness thrust upon them." Malvolio reading the trick letter. A2 Sc5	
			"I'll be revenged on the whole pack of you." Malvolio A5 Sc1	

Context/Literary Tradition

Twelfth Night was a festival twelve days after Christmas where the usual rules were turned upside down and the normal order of things was reversed. 'Twelfth Night' was first performed in 1602. Comedy: Common features of Shakespeare's comedies: set in an imaginary place, happy ending - usually marriage or betrothal, focus on theme of love and deception and mistaken identity. Shakespeare often included tragic elements in his comedies. Tragedies have unhappy endings usually involving the downfall of the main character.

Africa: Knowledge Organiser



Desertification

Desertification is when land turns into desert due to climate change and human activities. This is a huge problem in Africa as lots of farmers rely upon the land to make living. It is a particular problem in the Sahel region (sub Saharan).

Causes of Desertification

Deforestation:

1. Trees are chopped down for fire wood.
2. The soil is looser as there are no roots and is dried out by the sun
3. The land turns into desert.

Over Grazing:

1. More cattle are allowed to graze on the land
 2. This leaves the ground bare.
 3. The sun and wind dry out the land and it turns to sand.
- Climate Change has led to hotter, drier climates in areas of Africa. This means a reduced amount of vegetation can establish, stabilise soil and trap moisture.

Effects of Desertification

As the soil is less stable it is more likely to be eroded by wind. As soils become infertile, fewer crops can be grown and so food shortages can lead to famine. People are forced to migrate to other areas in search of fertile soils. Native animals also die out as vegetation loss impacts local food chains.

Responding to Desertification

Afforestation – Planting new trees stabilises soils and prevents soil erosion.

Integrated farming – Limiting the number of animals kept and encouraging farmers to grow crops alongside animals. Animal waste can be used to fertilise crops.

Drought resistant crops – Farmers can use crops which are able to withstand drought and grow in drier conditions.

Population growth – A slower population growth would reduce the pressures on farmland. Educating people about contraception may help to reduce population growth.

Welcome to Lagos

Case study to show an example of rapid population growth- Lagos, Nigeria. Fastest growing city in the world.

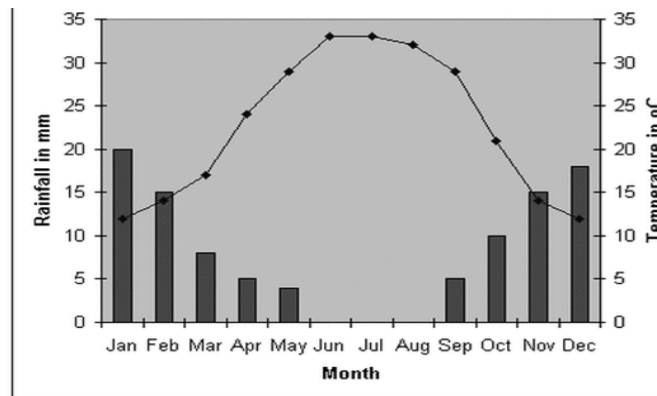
Opportunities:- Employment, more services, better schools, better sanitation, development of oil industry.

Challenges:- Slums, overcrowding, low paid jobs, dangerous working conditions, crime, environmental degradation, government corruption.

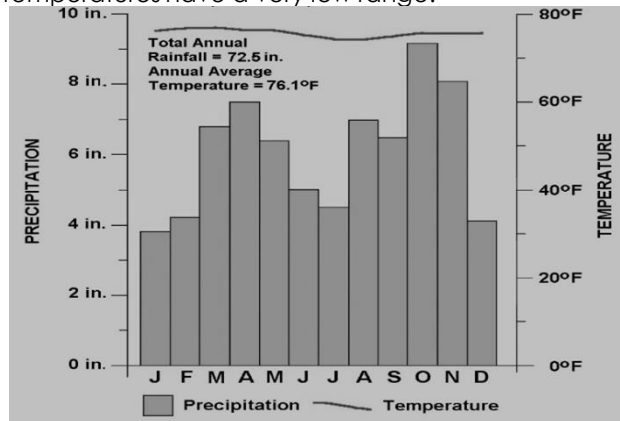
Contrasting Climates

Deserts are near the equator so temperatures are hot. Higher temperatures means water evaporates very quickly. There are not many plants in the desert so there is nowhere for water to be stored. If there are mountains nearby then any precipitation will fall over them. The winds that sweep across deserts come overland so they pick up very little moisture; this reduces the amount of precipitation.

This climate graph shows the climate of the Sahara. Note that rainfall does occur in the desert during some months of the year. Temperatures may seem low due to the fact they get very low at night time. This is due to a lack of cloud cover to trap any heat that has built up during the day.

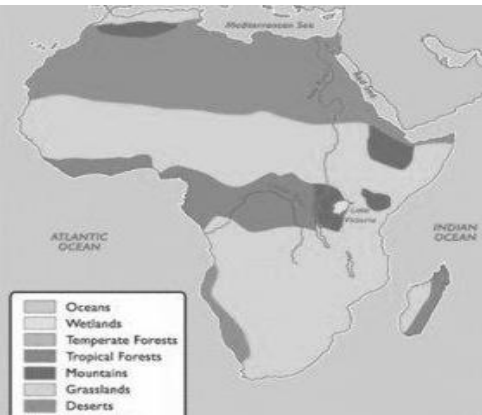


By contrast equatorial climates shows very different characteristics. Precipitation occurs all year round and temperatures have a very low range.



Biomes of Africa

The sheer size of Africa means a variety of different biomes can be found within the continent. Varied biomes results in varied wildlife. Mountain regions can be found in the north and east, deserts in the north and south. The largest desert is the Sahara which runs east to west across the continent. The Kalahari and Namib can be found on the south west coast. Tropical rainforests lie on and 5 degrees north and south of the equator. Grasslands encircle the rainforests to the north, east and south.



The battle for Africa's Mineral Wealth

Conflict diamonds- Sierra Leone. United Nations definition- "...diamonds that come from areas controlled by forces against fair and internationally recognised governments, and are used to fund military action against those governments."

Positives of diamonds in Sierra Leone:-

Increases countries economy so they can spend more money on infrastructure, services etc. Also creates jobs. Diamond sales generate in Sierra Leone \$125 million every year, 50% of all money the country takes.

Negatives of diamonds in Sierra Leone:-

Government couldn't control the diamond mines, so the rebels (RUF) took control of big parts of the country and started a civil war. Thousands were killed and many children were forced to fight.

Who is to blame for the problems?

Smuggler, General Taylor, Sierra Leone government, consumer, RUF

Climate Change

Climate change is a large-scale, long-term shift in the planet's weather patterns and average temperatures. Earth has had tropical climates and ice ages many times in its 4.5 billion year history.

What causes Climate Change?

Climate Change is not down to one single factor. It is caused by a number of different Human and Physical factors. Climate is often incorrectly considered to be a fairly recent phenomena solely down to humans. However studies of past climates show that it has always occurred and is not only caused by human activity.

Human Causes

Population growth – An increased in the number of people leads to an increase in CO2 emissions. This then traps more heat in our atmosphere.

Deforestation – Trees absorb CO2 in photosynthesis and act as sponges for CO2. Removing trees has led to more CO2 in the atmosphere and so more heat being trapped.

Fossil Fuel Consumption – The consumption of fossil fuels (coal/oil/gas) releases large amounts of carbon emissions in the atmosphere which means more heat being trapped.

Agriculture – Trees are often removed to make more land suitable for farming. Cattle ranching produces large amounts of a green house gas called methane.

Natural Causes

Orbital Change – the Earth has natural warming and cooling periods caused by Milankovitch cycles or variations in the tilt and/or orbit of the Earth around the Sun (Wobble, roll and stretch theory).

Volcanic Eruptions - When volcanoes erupt, they release a mixture of gases and particles into the air. Some of them, such as ash and sulphur dioxide, have a cooling effect, because they reflect sunlight away from the earth. Others, such as CO2, cause warming by adding to the greenhouse effect.

Solar Flares - Sometimes areas of the Sun will suddenly appear much brighter. These bright spots are called solar flares. They are areas where a large amount of energy is released to the surface of the Sun. A huge amount of heat then escapes from the sun's surface.

Case study of a fossil fuel- OIL Positives (Dubai)

A city within the United Arab Emirates. Before 1966 was a small poor fishing village. In 1966 they discovered oil. This stimulated the economy and the city grew massively.

Positive impacts are that oil provides 1/3 of all of Dubai's money. The remaining 2/3 of the money is linked to oil indirectly e.g.- Tourism. Tourism is linked to oil as all the huge infrastructure projects and tourist resorts have been mostly funded by oil revenues.

Negatives- Nigeria (Niger Delta)

Though oil provides 98% of Nigeria's money, it has many negatives. One of the main negatives is that shell oil who drill the oil in Nigeria allow oil spills to pollute the environment on a daily basis. This creates job losses as fisherman lose their jobs as all the fish die, and local vegetation e.g.- mangroves are poisoned as well. Finally Terrorists are active in the area fighting against the oil companies that pollute the environment.

Year 8 - Climate Change

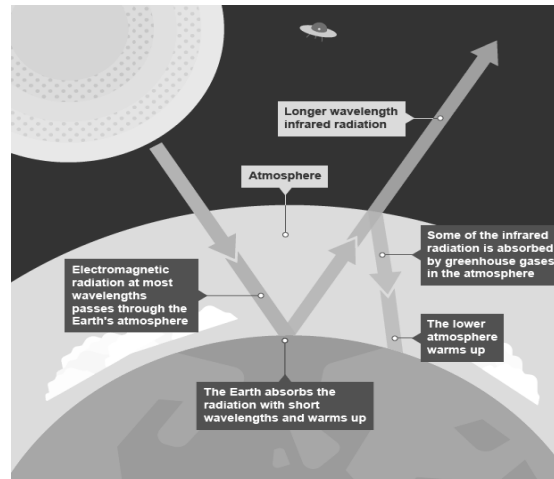
What is the Greenhouse Effect?

The greenhouse effect is a naturally occurring effect. It happens when thermal energy is trapped in the earth's lower atmosphere by greenhouse gases such as carbon dioxide (CO2).

-Energy from the sun bounces off the earth's surface as some of this energy is absorbed by the gases forming the atmosphere. Roughly 30% of this absorbed energy is then radiated back towards the earth.

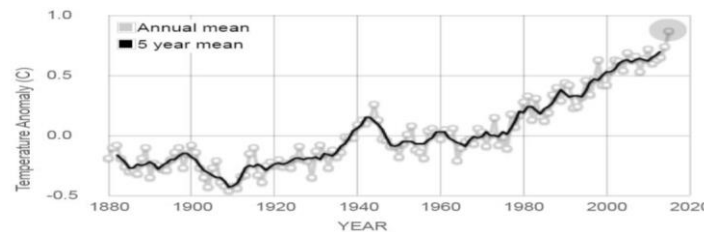
-This effect causes the earth's average temperature to be around 15°C.

-Without the natural greenhouse effect, the earth's average temperature would be around -18°C. This would be far too cold to sustain many forms of life.



-A build of CO2 and other greenhouse gases has led to less heat escaping. This is known as the enhanced Greenhouse Effect and has led to an increase in average global temperatures and climate change.

-The graph below shows how mean yearly temperatures have increased since 1880.



Effects Of Climate Change

The potential effects of climate change are wide and varied. When examining them we should consider the; social, economic and environmental impacts.
 Social – impacts upon people
 Economic – impacts upon the economy
 Environmental- impacts upon the environment e.g. Wildlife

Many effects will have social, economic and environmental effects.

It is also worth remembering that climate change will have positive as well as negative effects. Some examples of different effects are given below:

- Arctic Ocean ice sheet could melt away near north pole
- Increased rice crops in China
- South Australia able to grow more crops as it gets warmer
- Reduced rainfall in the Amazon rainforest, Brazil
- Stronger hurricanes in the Caribbean
- Ski resorts in the Alps close down due to lack of snow and ice
- Increased flooding in Bangladesh
- Increased threat of bush fires in the USA
- Increased desertification in some areas of Africa
- Species migration

Responding to Climate Change

There are two main categories when we look at responses to climate change; **Adaptation** and **Mitigation**.

Adaptation is when we change our lives and respond in order to cope with any changes happening due to climate change.

Mitigation is when we plan ahead and try to tackle the causes of climate change

Adaptation

Building more flood defences
 Changing the types of crops grown
 Using drought resistant food crops
 Turning ski resorts into mountain bike resorts

Mitigation

Renewable energy such as; wind turbines and solar panels
 Afforestation
 Waste recycling
 Electric cars
 Insulating homes
 International agreements

Globalisation

Globalisation is how the world is becoming interconnected and countries are becoming more interdependent. Interdependent- When 2 countries are dependent on one another.

Apple iPhone

The plastic	Gross National Income (Money earned by residents of a country including money earned abroad).
Made/ assembled	ASSEMBLED IN Shenzhen, a SEZ in China. High factories with large human rights abuses.
Minerals such as coltan and cobalt	Mined in brutal conditions in the eastern Congo. Many people have died from this metal
Designed	Designed in SILICON VALLEY California

Nike T shirt chain of production

The chain of production is the journey a t-shirt takes from plant to your house.

- Nike designs T-shirt in Nike world HQ in Oregon USA
- Farmers grow cotton in India, perfect location due to climatic conditions
- Cotton sent to mill to be woven into cloth (India)
- Cloth sent to factory in India to be made into T-shirt (labels added). These are often sweatshops with long working hours and poor working conditions
- Transported across ocean in container ship, all over the world
- Taken to shops to be put on sale in the places such as the UK
- Bought by consumer

Key terms

Standard of living : the economic level of a person's daily life.
Quality of life : is a social measure of well being e.g. Life expectancy or Literacy Rates.
HIC : High Income Country (rich)
NEE : Newly Emerging Economies e.g. India/China.
LIC : Low Income Country (poor)
Globalisation Globalisation is how the world is becoming interconnected and countries are becoming more interdependent. Interdependent- When 2 countries are dependent on one another
TNC- Tran's national corporation- TNCs or multinational corporations (MNCs) are companies that operate in more than one country

Year 8: Globalisation and fashion industry

Cotton farmer

Global cotton trade

Cotton is the most important of all natural fibres, accounting for almost half of all textiles in the world. It is an excellent clothing material with a huge variety of uses. Because it is so strong it can be made into fine, thin textiles, as well as hard-wearing fabrics like denim.

Cotton is now the world's most important non-food crop, covering five per cent of the planet's cultivated land area. It is grown in more than 80 countries around the world. For a good crop a long, sunny growing season, with at least 180 frost-free days and plenty of water, is needed.

Most cotton farmers in India live in poverty. They can earn as little as 7p an hour, work in blazing hot sun, long hours, and sometimes can't find work at all. The cotton farmers life revolves around the price they can sell their cotton at.

When cotton prices are low, they struggle; when it is high, they do slightly better.

Worldwide cotton prices are going down as more and more countries are starting to produce it. Also, less cotton is being grown by farmers due to climate change. But in addition to the problems that plague farmers in India, the situation in cotton is worse because the global cotton trade is heavily subsidised by governments in other countries.

Subsidy encourages farmers to increase the output of a particular product like cotton by partially offsetting the production costs e.g. in 2017 in the USA, the government paid farmers \$490m to grow cotton. This meant that the farmers could sell their cotton cheaper than Indian farmers who were not offered a subsidy by their government. This meant the world bought American cotton, not Indian cotton.

Nike in Indonesia

The factories are located in the Indonesian capital of Jakarta. The Nike world HQ is located in Oregon, USA

Category	Positives	Negatives
Economic. This is to do with...MONEY	<ul style="list-style-type: none"> • Factory workers \$1.25 an hour • Workers in NIKE WORLD HQ and sports stars paid very well e.g- Ronaldo earned \$20 million in 2017 from Nike 	<ul style="list-style-type: none"> • Some say \$1.25 is not enough to earn to maintain a good QOL.
Social. This is to do with PEOPLE'S LIVES	<ul style="list-style-type: none"> • Provided with a job, therefore reduced unemployment in many LIC countries • Nike improves some roads, infrastructure in local towns so people benefit from that. 	<ul style="list-style-type: none"> • Living conditions of workers poor, poor housing, lack of sanitation, basic diet. • Children often cant afford to go to school as workers cant afford it
Environmental. This is to do with THE ENVIRONMENT	<ul style="list-style-type: none"> • Nike world HQ environment is spotless with good maintenance 	<ul style="list-style-type: none"> • Nike dump leftover shoe rubber in streets, and burn rubber releasing toxic fumes which harms peoples QOL as children get lung diseases

TNC's- NIKE

Transnational corporations TNCs or multinational corporations (MNCs) are companies that operate in more than one country. They often have factories in countries that are not as economically developed because labour is cheaper. Offices and headquarters tend to be located in the more developed world. Unilever, McDonalds and Apple are all examples of TNCs.

Advantages

- Creation of jobs =
- stable income. More reliable than farming.
- Improved education and skills.
- Investment in infrastructure - e.g. new roads - helps locals as well as the TNC help to exploit natural resources.
- A better developed economic base for the country.

Disadvantages

- Fewer workers employed, considering the scale of investment
- Poorer working conditions than farming.
- Damage to the environment by ignoring local laws
- Profits going to companies overseas rather than locals
- Little reinvestment in the local area
- Factories are often footloose and jobs insecure. If labour costs increase, the company may move elsewhere
- Natural resources being over-exploited.

Knowledge Organiser: Rainforests

The layers of the rainforest

Emergent Layer:

The tallest trees are the "emergents," towering as much as 200 feet above the forest floor, with trunks that measure up to 16 feet around. Most of these trees are broad-leaved, hardwood evergreens. Sunlight is plentiful up here. Animals found here include eagles, monkeys, bats and butterflies.

Canopy Layer:

This is the primary layer of the forest and forms a roof over the two remaining layers. Most canopy trees have smooth, oval leaves that come to a point. It is a maze of leaves and branches. Many animals live in this area as food is abundant. These animals include: snakes, toucans and tree frogs.

Under Storey/Under Canopy Layer:

Little sunshine reaches the area, so the plants have to grow larger leaves to reach the sunlight. The plants in this area seldom grow to 12 feet. Many animals live here, including jaguars, red-eyes tree frogs and leopards. There is also a large concentration of insects here.

Shrub Layer:

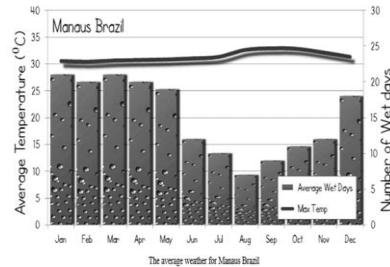
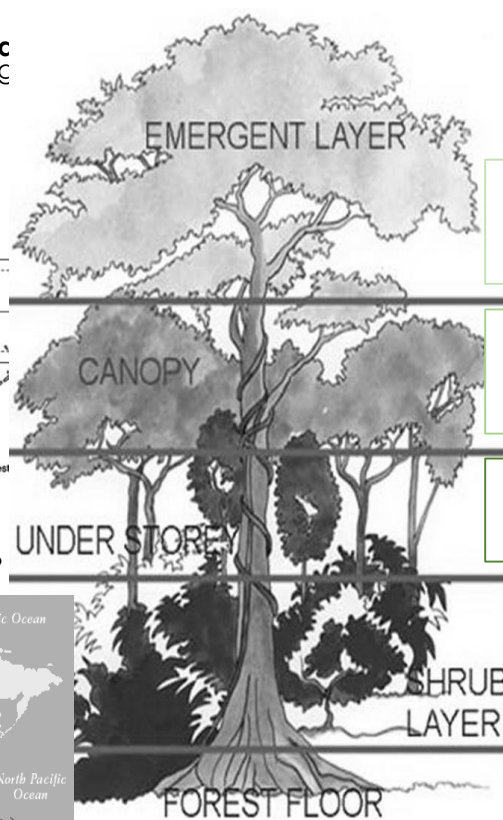
It is very dark down here. Almost no plants grow in this area as a result of the lack of light. Since hardly any sun reaches the forest floor, things begin to decay quickly. A leaf that might take one year to decompose in a regular climate will disappear in 6 weeks. Giant anteaters and alligators live in this layer.



The Amazon

Sustainable Development:

meets the needs of the current population without compromising the needs of future generations.



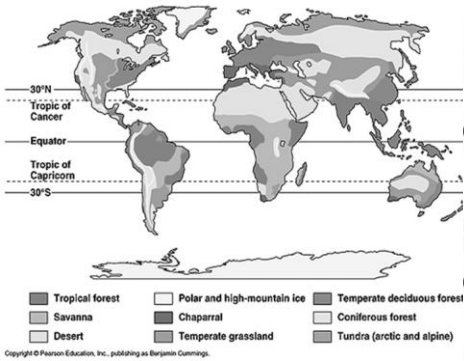
What is ecotourism?

This is tourism directed towards natural environments, where the tourists intend to support conservation efforts and observe wildlife.

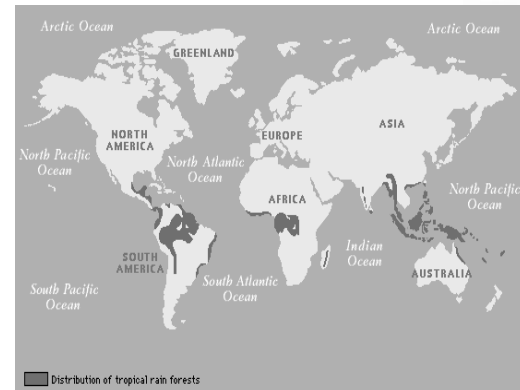
Ecotourism

- Usually involves small numbers of visitors.
- Uses local guides
- Uses local foods
- Lower carbon footprint
- Ecofriendly

Where are the worlds biomes found
Biome = a large naturally occurring community of flora and fauna occupying a major habitat, e.g. tundra.



Where are the rainforests located?



What is deforestation?

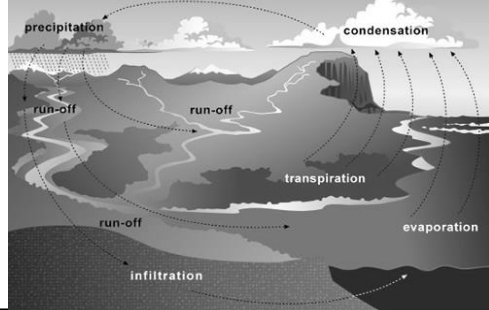
Deforestation is the cutting down and removal of trees by humans.



Malaysian Deforestation
 Since 2000, some 140200ha of forest have been lost on average every year.

Causes of deforestation

- ✓ Agriculture
- ✓ Dams
- ✓ Logging
- ✓ Mining
- ✓ Oil Extraction
- ✓ Ranching
- ✓ Road Building



Water Cycle - Key Terms	
Precipitation	Moisture falling from clouds as rain, snow or hail.
Interception	Vegetation prevents water reaching the ground.
Surface Runoff	Water flowing over the surface of the land into rivers
Infiltration	Water absorbed into the soil from the ground.
Transpiration	Water lost through leaves of plants.

Drainage Basin - Key Terms	
Drainage basin	An area of land drained by a river and its tributaries.
Watershed	The area of high land forming the edge (boundary) of the drainage basin
Source	Where the river begins.
Tributary	A small river or stream that joins a larger river.
Confluence	The point at which two rivers meet.
Mouth	Where a river meets the sea.



Types of Erosion	
The break down and transport of rocks – smooth, round and sorted.	
Attrition	Rocks that bash together to become smooth/smaller.
Solution	A chemical reaction that dissolves rocks.
Abrasion	Rocks hurled at the base of a cliff to break pieces apart or scraped against the banks and bed of a river.
Hydraulic Action	Water enters cracks in the cliff, or river bank, air compresses, causing the crack to expand.

Upper Course of a River
Near the source, the river flows over steep gradient from the hill/mountains. This gives the river a lot of energy, so it will erode the riverbed vertically to form narrow valleys.

Middle Course of a River
The gradient gets gentler. The river starts to speed up. The river erodes laterally making the river wider.

Types of Transportation	
A natural process by which eroded material is carried/transported.	

Formation of Ox-bow Lakes			
Step 1		Step 2	
	Erosion of outer bank forms river cliff. Deposition inner bank forms slip off slope.		Further hydraulic action and abrasion of outer banks, neck gets smaller.
Step 3		Step 4	
	Erosion breaks through neck, normally during a flood, so river takes the fastest route, redirecting flow		Deposition on the outer edges of the channel cuts off the meander leaving an oxbow lake.

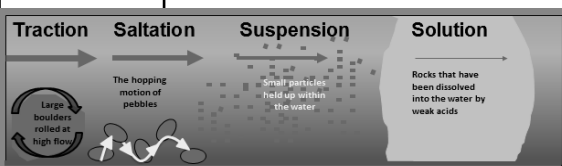
Formation of a Waterfall	
	1) River flows over alternative types of rocks.
	2) River erodes soft rock faster creating a step.
	3) Further hydraulic action and abrasion form a plunge pool beneath.
	4) Hard rock above is undercut leaving cap rock which collapses providing more material for erosion.
	5) Waterfall retreats leaving steep sided gorge.

Solution	Minerals dissolve in water and are carried along.
Suspension	Sediment is carried along in the flow of the water.
Saltation	Pebbles that bounce along the sea/river bed.
Traction	Boulders that roll along a river/sea bed by the force of the flowing water.

Lower Course of a River
Near the river's mouth, the river widens further and becomes flatter. Material transported is deposited at the sides of the river, or when it meets the sea.

River Management Schemes	
Soft Engineering	Hard Engineering
Afforestation – plant trees to soak up rainwater - reduces flood risk. Demountable Flood Barriers – put in place when warning raised. Managed Flooding – naturally let areas flood, protect settlements.	Straightening Channel – increases velocity to remove flood water. Artificial Levees – heightens river so flood water is contained. Deepening or widening river to increase capacity for a flood.

Formation of Floodplains and Levees	
When a river floods, fine silt/alluvium is deposited on the valley floor. Closer to the river's banks, the heavier materials build up to form natural levees.	<ul style="list-style-type: none"> ✓ Nutrient rich soil makes it ideal for farming. ✓ Flat land for building houses.



Case Study - Boscastle flood August 16 th 2004	
Boscastle is a small village in Cornwall. It has a permanent population of under 1000. 90% of jobs in the village are linked to tourism.	Effects of flood - 100 homes and 25 businesses damaged. 75 cars and 8 boats washed away. 150 people had to be rescued. Damage cost £15 million.

Physical and Human Causes of Flooding.	
Physical: Prolong & heavy rainfall Long periods of rain causes soil to become saturated leading runoff.	Physical: Geology Impermeable rocks causes surface runoff to increase river discharge.

What is Deposition?
When the sea or river loses energy, it drops the sand, rock particles and pebbles it has been carrying. This is called deposition. Heaviest material is deposited first.

Causes of flood - 5 hours of heavy rain (3 inches in 1 hour), Impermeable rock, steep valley sides, thin soils limit vegetation. Buildings narrowing river channel. Narrow bridges trapped debris.	Responses to flood - Scheme cost £4.6 million. Beds of rivers lowered by 6 ft and channels widened. Bridges widened. Car park raised by 5m. Trees removed from near river.
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Physical: Relief Steep-sided valleys channels water to flow quickly into rivers causing greater discharge.	Human: Land Use Tarmac and concrete are impermeable. This prevents infiltration & causes surface runoff.
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Key Words

East India Company

A British trading company launched to trade with Asia.

Caste System

The Hindu structure of society from the Untouchables (lowest class in Society) to the upper class.

Sepoy

A soldier in the Indian Army.

Massacre

To kill a group of people through bloody means.

Rebellion

To rise up against the government or ruling power.

Exploration

The period during the Tudor times when Britain looked for new places to take over.

Trade

Buying and selling goods.

Empire

A group of states or countries ruled over by another power e.g. Britain

Mughals

A family that ruled parts of India from the 1500s.

Nationalist

A person who wants independence for their country.

Indian National Congress

A political party that represents mainly Hindus in India.

Muslim League

A political party representing Muslim interest in India.

British Raj

The British rule of India.

Viceroy

British leader of India.

Party

A group of people that believe in a specific political idea.

Colony

A country that is ruled over by another power.

Dominion Status

A form of independence that gives a colony the power to rule themselves but maintains their relationship with the imperial power.

Partition

When India was divided into India and Pakistan after independence from the British Empire.

The British Empire in India



Key Events

East India Company

A British trading company that built relations with the Mughal Empire in India so Britain could trade spices, dyes, cotton and tea. They had trading posts in India and an army of 260,000 men by 1803. They began to colonise India for Britain through the Battle of Plassey. They functioned on behalf of the crown of England.

Indian Rebellion, 1857

An uprising against the rule of the East India Company in India. It was sparked by the Indian Army who didn't think it was acceptable that cartridges were greased with animal fat. This went against the Hindu and Muslim religions.

Contributions in WW1

1 million Indian troops served overseas in areas including: the 1st Battle of Ypres (Belgium) and the Middle East. The Indian Army won 12,000 medals for gallantry and 12 Victoria Crosses for bravery.

In return Britain passed the Government of India Act in 1919 which gave 2 million wealthy Indians the right to vote.

Rise of Nationalist Groups

Muslim League—Led by Jinnah. They wanted a say for the Muslim minority in India. From WW2 fought for a separate Muslim state: Pakistan.

Indian National Congress—Led by Gandhi. After WW1 the INC wanted dominion status. Organised different campaigns against the British including the Salt March and civil disobedience campaigns. From the 1930s sought independence from British rule.

Successes and failures of the Non-Cooperation Campaign

It aimed to resist British rule by non-cooperation with the British after the Amritsar Massacre.

Success—united all Indians against the British and was the first step towards getting eventual independence from the British Raj.

Failure—some Indians took the campaign as an opportunity to take revenge. In 1922 a police station was set on fire killing those inside. (Chauri Chaura incident)

Contributions in WW2

2.5million Indians fought in WW2. They were the largest volunteer army and mainly fought in Africa. Their contribution was rewarded with independence from British rule in 1946.

Some Indians fought with the Axis powers as they saw this as the best way to get independence from the British. They were led by Chandra Bose.

Independence and Partition

Lord Mountbatten, the last Viceroy of India had the task of preparing India for independence. He came up for a plan of partition where India would be split into Pakistan and India. The Indian Independence Act (Mountbatten Plan) legalised the separation of India. Pakistan was formed 14th August 1947 and India a day later.

Amritsar Massacre, 1919

The British banned public meetings after a series of riots in Amritsar. A group of men, women and children held a public meeting in April 1919 and without warning were fired upon by British troops under the command of General Dyer. 379 people were killed and 1,200 wounded.

Key People

Robert Clive

East India Company's military commander-in-chief in India. Fought in the Battle of Plassey and secured control of Bengal for the British.

Lord Richard Wellesley

Governor General of India from 1798-1805. He wanted to increase British power and control on India by defeating the Mysore and the Marathas.

James Ramsay

East India Company's governor-general 1848-56. He developed the idea the 'doctrine of lapse'. This meant if an Indian ruler died with no male heir, their territory would go to the British.

General Dyer

General of the British Army in India. He had the nickname the 'butcher of Amritsar'. He gave the order to the army to fire on innocent people who were having a meeting in a public space. He was stripped from his position but not court martialled.

Mahatma Gandhi

He was a leading member of the Indian National Congress who campaigned for Indian independence from British rule. He used non-violent methods of non-cooperation to try and effect change as well as hunger strikes.

Muhammad Ali Jinnah

Led the Muslim League from 1913 and wanted to have Muslim voices heard in a majority Hindu country. He campaigned during WW2 for an independent Muslim country that became known as Pakistan.

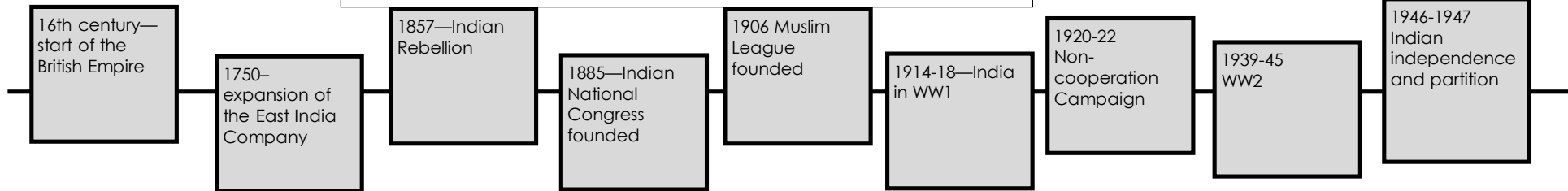
Lord Mountbatten

He was appointed the last Viceroy of India and became the first Governor General in an independent India. He created a partition plan that would split Muslims in a new country that became known as 'Pakistan'.

Chandra Bose

He was a member of the Indian National Congress who formed a breakaway nationalist group called the Forward Bloc Party. During WW2 he met with Hitler and joined the Axis powers along with 3,000 Indian Prisoners of War forming the Free India Legion.

Timeline of the British Empire in India



Crime & Punishment in 19th Century Britain – Knowledge Organiser

KEY DATES	
1816	The first national prison opened in Millbank in London – to hold criminals awaiting transportation.
1823	Prisoners were held in categories e.g. violent, non-violent, women. The Gaols Act also said that prisoners should be reformed.
1829	Metropolitan Police Act – England's first professional police force set up in London.
1834	Poor Law Amendment Act
1842	Pentonville Prison was set up where prisoners were kept apart for as long as possible under the 'separate system'.
1856	Police Act made it compulsory for all towns and counties to have a police force. All police forces were inspected by the government.
1865	Prisons had to follow national rules – prisoners must work and live in harsh conditions.
1868	The end of public executions.
1868	Transportation to Australia ended.
1869	National Crime Records set up.
1870	Dr Thomas Barnado set up an orphanage for boys to save them from workhouses.
1877	All prisoners were brought under government control.
1878	Criminal Investigations Department (CID) set up.
1888	Five women were murdered in Whitechapel – believed to have been the work of Jack the Ripper.
1902	First conviction in court using fingerprint evidence.

KEY INDIVIDUALS
<p>Jack the Ripper – a serial killer who is believed to have murdered 5 women in 1888. The killer was never caught but there are lots of rumors about who the killer actually was.</p> <p>H Division – The police force responsible for policing Whitechapel (the area where the Ripper murders took place).</p> <p>The Whitechapel Vigilance Committee – a group of Whitechapel businessmen who were frustrated that the police hadn't found Jack the Ripper – they organized a system of rewards and took to the streets at night with planks of wood.</p> <p>PC Alfred Long – the police officer who discovered a piece of Catherine Eddowes apron, smeared with blood and human waste. On the wall behind was written: 'the juwes are the men that will not be blamed for nothing'.</p> <p>Inspector Frederick Abberline – the inspector in CID assigned to the Ripper case.</p> <p>Robert Peel – Prime Minister from 1834 to 1835. He is responsible for reforming prisons and making lots of changes to how they were run as well as setting up the Metropolitan Police Force in London in 1829.</p> <p>John Howard – a prison reformer who argued that prisoners would only change their ways if they were reformed and given clean conditions and decent food and water.</p> <p>Elizabeth Fry – a prison reformer who did charity work to help the sick and poor. She believed that prisoners should be taught to sew and read the bible. She also believed women and children should receive an education in prison.</p>

EVENT	OUTCOME
The Poor Law (1815)	<ul style="list-style-type: none"> Each parish had to look after its own poor. If you were unable to work then you were given money to survive. Money was raised by taxes on the middle and upper class.
The Metropolitan Police Act (1829)	<ul style="list-style-type: none"> Strengths: Similar standard of policing across London; They were paid a wage; centralized system with training. Criticisms: People concerned about the cost of them; concerns about them interfering too much in people's lives; concerns that they would be like the French police.
The Poor Law Amendment Act (1834)	<ul style="list-style-type: none"> Reduced the cost of looking after the poor. Stopped money going to poor people except in exceptional circumstances. Poor people had to go to the workhouse to get help. The poor were given clothes and food in exchange for several hours of manual Labour each day.
Building of Pentonville Prison (1842)	<ul style="list-style-type: none"> Ensured prisoners weren't influenced by other criminals who might make them commit worse crimes. Made sure the criminal 'paid' for their crime. Very harsh punishment. Separate cells for up to 23 hours a day.
The Ripper Murders (1888)	<ul style="list-style-type: none"> 5 women murdered in Whitechapel – they were all prostitutes. Ripper never caught – vigilance committee set up by businesses men who were frustrated by the lack of police action. Lots of media involvement – the police received many hoax letters claiming to be 'Jack'. Jewish people blamed after the death of Tsar Alexander II of Russia – a Jewish man was blamed. Jews were resented by the people of London – they were quick to set up their own businesses.
The Ending of Transportation (1868)	<ul style="list-style-type: none"> Australia seen as a desirable place to settle - transportation wasn't a deterrent. People were concerned about the costs of sending criminals abroad. New ideas about prisons meant new prisons were built and transportation was no longer needed. Many people believed criminals were responsible for high crime levels in Australia.

Key Words
Cholera
 A waterborne disease, which causes diarrhoea and dehydration. A killer in the 19th century.

Spontaneous Generation Theory
 The belief that rotting matter (stuff) created microbes. Microbes spread miasma (bad air).

The Enlightenment
 People in the 18th century that believed in independent thinking. Many were scientists and intellectuals.

Microbe
 A living organism that is too small to see without a microscope. E.g. bacteria

Diphtheria
 A disease that mainly affected children and caused a painful cough and a fever.

Hospital
 A place where sick/ill people go for medical care.

Crimea
 The location of a war between Britain and Russia in 1854.

Infection
 When disease causing microbes enter your body.

Anaesthetic
 A chemical used to calm patients and prevent pain when being operated on.

Antiseptic
 A chemical used to prevent infection by killing microbes on wounds.

Chloroform
 A chemical used as an anaesthetic by James Simpson

Laughing gas
 Nitrous oxide used as an anaesthetic in early surgery.

Carbolic acid
 A chemical which was sprayed in the air during surgery to prevent wounds becoming infected.

Aseptic surgery
 Surgery where microbes are prevented from getting into a wound in the first place rather than being killed by antiseptic later.

smallpox
 A highly infectious and deadly disease that caused red blisters and death. Serious epidemics in Britain in the 18th and 19th centuries.

inoculate
 To infect yourself with a disease to avoid a more severe case of it later.

Vaccination
 When a substance is inserted into the body to encourage the immune system to fight it by producing white blood cells.

Epidemic
 When a disease is widespread over a certain area at a particular time.

Miasma Theory
 The belief that disease is caused by bad/smelly air.

Inoculator
 A person who is paid to infect someone with a disease in order to prevent them getting a stronger version of it in the future e.g. smallpox

Key People	
Louis Pasteur	He discovered Germ Theory, which challenged the belief of Spontaneous Generation Theory. His main beliefs were 1. The air contains microorganisms, 2. microbes can be killed by heating them, 3. Microbes cause decay. He also said that if germs caused decay then they might also cause disease. At first it had no impact on British ideas of what caused disease and illness because he was not a doctor and his work focused on decay and rotten food. Britain believed Spontaneous Generation Theory up to the 1870s. Some scientists started to think about Pasteur's work such as Joseph Lister and John Tyndall but the impact wasn't huge.
Robert Koch	He took Pasteur's theory and successfully identified that different germs caused diseases. He discovered the bacteria that caused TB and cholera. This inspired other scientists to investigate the link between bacteria and disease. Koch's work connecting bacteria to disease was a huge breakthrough in the diagnosis of disease. A greater understanding the cause of disease meant that doctors could try and treat the direct cause of the disease rather than just the symptoms. It helped prove John Snow's theory on cholera correct.
Florence Nightingale	In 1854, Britain was at war with Russia in the Crimea, rumours came home that the hospitals weren't fit for the soldiers to be treated in. She asked the government to send her and 38 other nurses to the Crimea to improve hospital conditions and treatment. She made 3 important changes: scrubbing brushes to get rid of dirt near patients, nurses were organised to treat 2,000 soldiers and clean bedding and good food was given to patients. In the Crimea the death rate dropped from 40% to 2% over a 6 month period. Nightingale came home to a heroes welcome, which gave her the ability to improve hospitals in Britain too. She influenced how hospitals were designed in Britain—more windows, larger rooms, isolation wards. She opened a nursing school at St Thomas' Hospital, London in 1860 where her methods were taught to future generations of nurses.
James Simpson	He was a young surgeon from Edinburgh believed there were better anaesthetics than laughing gas. He discovered chloroform could be used as an effective anaesthetic. In 1853, Queen Victoria was given it in childbirth. There was a risk of chloroform: dose had to be carefully controlled otherwise you could kill the patient, it sometimes affected the patient's heart. Simpson was knighted for services to medicine. This is because chloroform allowed more complex and longer surgeries to take place. Infection and bleeding a problem though.
Joseph Lister	He was an English surgeon who studied infected wounds. He believed Pasteur's Germ Theory could explain infection. If food rotted then maybe microbes could cause flesh to rot. In 1865, he operated on a patient with a broken leg and soaked a bandage in carbolic acid. This helped the wound to heal cleanly. He began to spray carbolic acid in the air during surgery to prevent infections. Antiseptic surgery did not catch on quickly—not all surgeons were willing to use the method as they didn't believe the air was full of germs. Carbolic spray dried the skin and left an odd smell—surgeons believed this couldn't be good for the patient. In the long term, new antiseptic methods were developed to improve surgery. Attitudes changed in surgeons—they now saw it as their duty to perform safe surgery.
Edward Jenner	He was a rural doctor who regularly treated dairymaids for cowpox (a less deadly version of smallpox). He realised that these maids never then got smallpox. He experimented on a boy (James Phipps) by infecting him with cowpox. A week later he infected James with smallpox, which he never caught. This founded the first vaccination. Lots of opposition to vaccination by the church, inoculators who would lose money if vaccination was used and The Royal Society...scientists didn't trust the work of a local doctor. The government supported vaccination by the 1840s and made the smallpox vaccination compulsory from 1852. It inspired other doctors and scientists to create vaccines for other diseases. It is used widely today in Britain and across the world.
John Snow	He was a surgeon in London during cholera epidemics and developed a theory on the cause of it. He discovered that cholera was caused by dirty drinking water after creating a map of Soho. He connected all the deaths to the Broad Street Pump. He removed the pumps handle and the deaths in the area stopped proving his theory. The government invested in a new sewage system to keep drinking water and sewage separate. This wasn't completed until 1875. Some people still rejected Snow's findings and continued to believe Miasma Theory. This was because Snow had no scientific proof that his theory was correct until Pasteur's Germ Theory 7 years later. Short term—he removed the pump handle and saved Soho residents from getting cholera.

18th and 19th Century Medicine Timeline	
1700s	The Enlightenment
1722, 1723 & 1740-42	Smallpox epidemics
1795	Humphry Davy discovers laughing gas can numb pain
1796	3,548 people die from smallpox
1847	Edward Jenner's vaccination experiment on James Phipps
1847	James Simpson discovers chloroform can be used in surgery
1853	Queen Victoria uses chloroform during the birth of Prince Leopold
1854-1856	Florence Nightingale goes to nurse in the Crimea
1860	Nightingale School for Nurses opens at St Thomas' Hospital
1865	Joseph Lister uses carbolic acid after surgery as an antiseptic
1878	Pasteur publishes his Germ Theory
1882	Robert Koch discovered the bacteria that caused Tuberculosis (TB)
1883	Robert Koch discovered the bacteria in cholera
1900	Aseptic surgery—instruments steam cleaned and operating theatres scrubbed
1905	Koch received the Nobel Prize for Medicine
1852	Government makes smallpox vaccination compulsory
1872	Compulsory vaccination enforced by the government
1831	1st cholera epidemic in Britain
1832	5,275 people killed by cholera in London
1854	Cholera in Soho—John Snow investigates
1875	New sewer system completed in London
1858	The Great Stink, London

Industrial Revolution—Knowledge Organiser

Domestic System

Until about 1750 people made cloth in their own homes. This was called the domestic system. This was extremely popular in Yorkshire where woollen cloth commonly made. Those who were requiring the cloth would buy the raw wool product and take it to a number of outworkers to make cloth. The family would work together side by side typically in the same room. Usually, women would spin the cloth and men would weave it. At the end of the week, a merchant would collect the finished cloth, pay the workers and then sell the cloth for profit. There were three main stages to making cloth. These stages were carding, spinning and weaving. Most cloth was made from either wool or cotton, but other materials such as silk and flax could be used depending on the qualities of the outworker.

Causes of the Industrial Revolution

- **Political and Economic competition in Europe** - keeping up or ahead of other countries in Europe.
- **Developments in Science** - scientists were making new discoveries and making people more knowledgeable.
- **Farming Improvements** - these allowed more crops and bigger animals to feed the increasing population.
- **Banks** - these were set up to lend money to businesses to help them buy machinery and raw materials.
- **Entrepreneurs** - ambitious and successful businessmen invested in projects and funded the construction of many factories.
- **New Inventions**, such as The Flying Shuttle and The Spinning Jenny. These allowed productivity to increase rapidly.
- **Population Increase** - more people in Britain meant that more food, clothing and everyday items were needed. The people also provided the workforce for the new industries.
- **Increase in Transport** - the systems built soon became a popular source of transportation since they were economical and reliable. Boats on the canal were pulled by horses that walked on either side of the canal on tow paths. Wooden tracks linked coal mines to rivers and canals, and carriages were pulled by horses. The invention of the engine technologised the transportation industry.
- **The British Empire and the Slave Trade** - owning colonies across the world allowed Britain to improve trade links and become more wealthy. These countries provided cotton and other raw materials to make into clothes. An example of this was the Slave Trade Triangle.

Inventions

The Flying Shuttle, John Kay, 1733:

This invention attached the shuttle to a cord which automatically moved it across the loom. A weaver could produce much wider cloth at faster speeds than before. However, it still needed a skilled person to operate the machine.

The Spinning Jenny, James Hargreaves, 1764:

This invention meant that up to eight threads could be spun at once and sped up the process of spinning. However, one problem with this invention was that the thread could be weak. One advantage of this invention is that the machine could be easily operated and could be controlled by an unskilled man or even children.

The Water Frame, Richard Arkwright, 1769

This machine involved three sets of paired rollers that turned at different speeds. The machine produced a thread that is far stronger and solved the problem of weak threads. Unlike the other new inventions this machine was too difficult to be operated by hand and needed to be powered by waterwheels. This machine had a big impact as it was the first powered, automatic and continuous textile machine. This invention led to the opening of Spinning factories and ended small home manufacturing (the Domestic System).

The Spinning Mule, Samuel Crompton, 1779

This invention combined the moving carriage of the Spinning Jenny with the rollers of the Water Frame. The Spinning Mule gave the spinner greater control over the weaving process and the mule produced a strong, fine and soft yarn which could be used in all kinds of textiles. Another important aspect of this invention was that the Spinning Mule could also be driven by the new steam engines that were being produced at the time so were good additions to the new factories.

The Power Loom, Edmund Cartwright, 1785

The Power Loom needed enough space for the steam engine to power it and was needed to be placed in big factories. This machine was that good that it led to the building of more textile factories. It also increased the production and quality of textiles.

Growth in Population

Between 1700 and 1750, the population of England stayed relatively flat, with little growth. Precise figures don't exist for the period before the establishment of a nationwide census, but it is clear from existing historic records that Britain experienced a huge growth in the second half of the century. Some estimates suggest that between 1750 and 1850, the population in England more than doubled. People did relocate from the rural regions into large cities to be closer to their new factory workplaces, but studies have ruled out sheer immigration as the largest factor. The population increase came from internal factors, such as changes in **marriage age**, **improvements in health** allowing more children to live, and an increase in the **number of births**.

• **Marriage** — the average age of people marrying for the first time fell, as did the rates of people never marrying, which ultimately led to more children. The birth rate in Britain also rose for out-of-wedlock births.

• **Falling death rates** — the death rates in Britain began to fall and people began to live longer. This might be surprising given that the newly crowded cities were rife for disease and illness, with an urban death rate higher than the rural areas, but overall there were health improvements and a better diet for people (from improved food production and wages to buy it).

• **Increase in births** — the rise in live births and drop in death rate happened for a number of factors, including that the climate was altering, or that hospitals and medical technology had made advances such as smallpox vaccines. But today, the increase in marriage and birth rates is held to be the main reason for the sheer growth in population numbers.

• Increase in immigration into towns and cities.

Timeline

1733

John Kay invents the Flying Shuttle.

1764

James Hargreaves invents the Spinning Jenny.

1769

Richard Arkwright invents the Water Frame.

1779

Samuel Crompton invents the Spinning Mule.

1785

Edmund Cartwright invents the Power Loom.

1802 Health Act

Factory apprentices only: a maximum 12-hour day; good accommodation and medical treatment.

1819 Factory Act

A maximum 12-hour day. No child under the age of nine to work.

1833 Factory Act

Children banned from working in textile factories under the age of nine. 9 - 13 year olds limited to 9 hours a day and 48 hours a week. 13 - 18 year olds limited to 12 hours a day and 69 hours a week. All children under eleven to have two hours education a day. Government Factory Inspectors appointed to enforce the law.

1834 Poor Law

The government introduced a new Poor Law. This abolished relief and instead said that the poor would now all be put in workhouses.

1842 Mines Act

All women and children under 10 were banned from working underground. No one under 15 years was to work winding gear in mines.

1844 Factory Act

Minimum age for working in factories reduced to 8 years old. 8 to 13 years old to work a maximum of six and a half hours on weekdays and only six hours on Saturday

13 to 18 year olds to work a maximum of 12 hours a day and the same applied to women. Safety guards had to be fitted to all machines. Three hours education a day for children.

1847 Ten Hour Act

10 hour day introduced for under 18's and for women.

1867 Factory Act

The legislation was extended to all workshops with more than 50 workers.

1874 Factory Act

No child under the age of 10 to be employed in a factory

1878 Factory and Workshops Act

No woman to work more than 60 hours a week. No child under ten to work. Laws on safety, ventilation and mealtimes.

Factory Conditions

Negatives:

Long working hours: normal shifts were usually 12-14 hours a day, with extra time required during busy periods. Workers were often required to clean their machines during their mealtimes.

Low wages: a typical wage for male workers was about 15 shillings (75p) a week, but women and children were paid much less, with women earning seven shillings (35p) and children three shillings (15p). For this reason, employers preferred to employ women and children. Many men were sacked when they reached adulthood; then they had to be supported by their wives and children.

Cruel discipline: there was frequent "strapping" (hitting with a leather strap). Other punishments included hanging iron weights around children's necks, hanging them from the roof in baskets, nailing children's ears to the table, and dowsing them in water butts to keep them awake.

Fierce systems of fines: these were imposed for talking or whistling, leaving the room without permission, or having a little dirt on a machine. It was claimed that employers altered the time on the clocks to make their workers late so that they could fine them. Some employers demanded that their overseers raise a minimum amount each week from fines.

Health: cotton thread had to be spun in damp, warm conditions. Going straight out into the cold night air led to many cases of pneumonia. The air was full of dust, which led to chest and lung diseases and loud noise made by machines damaged workers' hearing.

Positives:

Mass production: before the Industrial Revolution, most families had to produce their own food and clothes. The Industrial Revolution arguably made things easier, because families could now buy all their goods instead of making them.

Creation of jobs: There were thousands of new jobs created. Although several of the jobs created were not very desirable positions, workers still went home with a pay check.

Child Labour

Children sometimes worked up to 19 hours a day, with a one-hour total break. This was the extreme, but it was not uncommon for children who worked in factories to work 12-14 hours with minimal breaks.

Not only were these children subject to long hours, but also, they were in horrible conditions. It was very common for children to be using or working near large, heavy, and dangerous equipment. Many accidents occurred, injuring or killing children on the job.

Not until the Factory Act of 1833 did things improve. Children were paid only a fraction of what an adult would get, and sometimes factory owners would get away with paying them nothing.

Orphans were most vulnerable to this slave-like labour. The factory owners argued children didn't need a wage because they gave the orphans food, shelter, and clothing (all of which were far below par). The children who did get paid were paid very little.

Small girls worked in mills as 'piecers'. They mended broken threads. 'Scavengers' crawled beneath clattering machines to pick up scraps of cotton. They risked getting caught in the machinery, losing hair or arms. In spite of this, most mill-owners thought factory work was easy. At first, there were no laws to protect working children.

Parish apprentices were orphans from workhouses in southern England who were "apprenticed" to factory owners, supposedly to learn the textiles trade. They worked 12 hour shifts, and slept in barracks attached to the factory, in beds just vacated by children about to start the next shift.

People called in Parliament for laws to stop child-work. Inspectors, called Commissioners, went into factories and mines. They talked to working children to find out the facts.

Keywords

Industrial Revolution—Knowledge Organiser

Industrial Revolution

Period in British history in which society moved to a focus on machines, factories, and industry. Large factories and machines were built to do things people used to do by hand. Therefore many people moved from rural areas to urban areas seeking work.

Rural

Countryside

Urban

Towns/cities

Agriculture

Cultivating the soil, producing crops, and raising livestock.

Industry

Factories converting raw materials into goods to be sold.

Tenements

A new kind of cheap housing that was constructed. Here, dozens of families resided under one roof.

Cholera

A disease which is caused by bacterial infection of the intestines, and can kill within hours. It spreads through drinking water, which is infected with the bacteria or with sewage.

Child Labour

Many poor children worked in the factories and mills. Children often had to work long hours in dusty, dirty conditions. They often had the most dangerous jobs. There were many accidents and cases of children becoming deformed from the long working hours spent at the machines.

Workhouses

Places where poor people who had no job or home lived. They earned their keep by doing jobs in the workhouse.

Slums

Squalid and overcrowded areas of towns and cities lived in by very poor people.

Domestic System

System in place before the Industrial Revolution where people would produce cloth in their own homes.

Entrepreneurs

These were talented and ambitious people who understood how to turn all these different developments into successful businesses to make money.

Social Reformers

People who wanted to improve public health, social conditions and the lives of the poor.

Inventions

These created and improved machines that made goods quicker or drove other machines faster.

Sir Titus Salt

Sir Titus Salt lived from 1803 to 1876. He was a good employer and built a new mill on the outskirts of the town of Bradford, where the air was fresh, and working conditions would be more pleasant for his workers. It was a massive mill with space, light and warmth in his new mill. The location was superb, in a green and pleasant area and the Mill opened in 1853, on Titus Salt's 50th birthday. Titus Salt created an entire village of houses, park, school, library, recreation and learning institute, and outdoor sport facilities around the mill, naming the streets after his children and family. In 1869, he was created a baronet by Queen Victoria, thus becoming Sir Titus Salt.

RPE Knowledge Organiser

Topic	Knowledge
Religion	<p>According to UK Law, for an organisation to be defined as a religion it must have the following three features:</p> <ol style="list-style-type: none"> 1. Supreme Spiritual Being: Belief in a god or gods, goddess or goddesses, a supreme being or divine spiritual principle which is the object or focus of the religion. 2. Sense of Seriousness and Importance: A relationship between the believer and supreme being or entity by showing worship and/or a sense of clear seriousness and importance. 3. Positive Moral Values: An identifiable positive beneficial moral or ethical framework. <p>* These key features can be easily identified in all main world religions, for example, in Christianity:</p> <ol style="list-style-type: none"> 1. Supreme Spiritual Being: God in the form of the Trinity (Father, Son and Holy Spirit). 2. Sense of Seriousness and Importance: Christians demonstrate their commitment by praying, attending Church services, following the 10 Commandments and celebrating religious holy days such as Christmas (birth of Jesus), Easter (death and resurrection of Jesus) and others such as Advent and Holy Week. 3. Positive Moral Values: Christianity teaches equality, acceptance and kindness to all human beings, for example Jesus taught 'Love thy neighbour'.
Alternative Religions	<p>An alternative religion is a new religious movements with modern origins often with a small number of followers, examples we have studied are Jediism and Rastafarianism</p> <ul style="list-style-type: none"> • Jediism originates from the 1977 Star Wars films and books produced by George Lucas; in 2008, Daniel Jones founded the '<i>International Church of Jediism</i>'. Its core beliefs centre on the idea of 'The Force,' an energy that flows through all things and joins the universe together. They also believe that humans can tap into the Force to unlock greater potential. A 2001 census of held religions found that 390,127 people claimed they were part of the Jedi religion. • Rastafarianism originated in Africa as a response to the oppressive slave trade, guided by Marcus Garvey in the 1920's. He is considered to be one of the religion's prophets, and taught people to be proud of their race, and stand against oppression. He predicted God would return again to Earth and create a new world – Zion - for those who has been enslaved and mistreated. In 1930 Haile Selassie I was appointed as Emperor of Ethiopia, he is believed to be the second coming, like Jesus, he is thought to be God in human form who has visited Earth. They believe in one God (Jah) and the key theme of Rastafari is that they will one day return to Africa, and particularly to Ethiopia - 'Zion' - the spiritual ideal world of Rastafari. They often use cannabis in religious ceremonies to connect to God which has caused controversy • Issues: Many alternative religions are ridiculed and not respected despite great importance to the believer. Technically as long as the criteria set out by UK law is met anyone can create their own religion. Problems surrounding drug use and inequality in Rastafarianism – should religion encourage drug use? Can religions be exclusive?
Religion & Ethics	<ul style="list-style-type: none"> • For centuries religious believers have used their faith to help guide them to make moral decisions, whether this be through the Bible, Church or the support of religious leaders. However St Thomas Aquinas a Christian philosopher created 'Natural Moral Law' (NML) as a framework on how humans should act. • NML is not dependant on blind faith, but suggests humans should use REASON, given by God to help them make moral and ethical decisions. First he proposed that everything that exists in the world has 4 causes, a Material Cause (what it is made of) a Formal Cause (how it is designed) an Efficient Cause (how it got to that state) and a Final Cause (the end purpose and potential) Aquinas suggested that the Final Cause is the most important – as humans we should ensure everything meets its potential. • God created everything with a Final Cause, humans are intelligent beings with reason, therefore it is our responsibility to consider the Final Cause when making decisions, EVERYTHING should reach its Final Cause, and by doing this we are following God's will. • NML is not concerned with the consequences of actions, but for everything to reach its Final Cause regardless of the consequences. • Positives: It's simple to follow and not dependant on the feelings or emotions of a person, feelings can change but right and wrong remain fixed. • Negatives: It is vague and so not precise or consistent, it relies on humans making judgements which can be wrong. The consequences are never considered – it may not be what is best for humanity. It can also be unclear – sometimes a FINAL CAUSE is a matter of opinion.
Innate Sense of God	<ul style="list-style-type: none"> • Some philosophers suggest that all human beings have an innate sense of God, this is the idea that every human being who has ever existed on Earth has understood the concept of God – some would argue that this therefore means God must exist. If the idea of God is something that every human being understands then it is a shared idea of all of humanity proving God's existence. Supporters often present cavemen drawings of God and remote tribes' belief in God as evidence that God is present in all aspects of society. • Philosopher John Hick supports the idea that all humans have an innate sense of God, he created the 'Cultural Lens' theory – it suggests that all humans have a sense of God, but our culture and experiences make us interpret God differently. We all view and experience the world differently, this is our 'Cultural Lens' the way we see the world, this impacts the way we understand God, this explains why there is so much variety in religion - it's the same God – just being viewed differently! • Philosopher Rene Descartes also supports the idea of an innate sense of God, he spent his life doubting everything – even his own senses! He concluded that we can only truly know a few things, one is that we are thinking human beings so must exist, and secondly that all thinking human beings have an innate sense of God – therefore God must exist.

RPE Knowledge Organiser

Topic	Knowledge
Anti-Theism	<ul style="list-style-type: none"> One of the most prominent anti-theists is Richard Dawkins, a professor, biologist and scientist, he is outspoken in his rejection of religion and has written many books (available in the LRC) on his support for scientific discovery and criticism of those who believe in God. He makes 5 key arguments: 1. The Evolution Solution: Dawkins argues that Darwin's Theory of Evolution makes God unnecessary, we don't need to turn to God for answers – science can explain everything. 2. No Evidence Beliefs about the divine creation of the world are essentially faith claims – there is no evidence. Dawkins thinks believing in a religion makes people stupid, they stop looking for answers and they don't help science improve. They just accept what their religion tells them and don't question it. 3. Search For Meaning: The question of meaning and significance should be an ongoing question, humans want to feel their life has meaning, we should continue to search for this – not just accept religion and give up. However Dawkins claims it is foolish to suggest meaning exists outside of this universe. 4. The Religion Virus: Dawkins argues that religion leads to evil - likening it to a virus which effects human minds. He claims religions take part in, Misleading education (i.e. Teaching God as fact), Prejudice, Ignorance, Inciting fear, and even claims that bringing up children in a religion is the same as child abuse. 5. Memes: Dawkins suggests that religion is a meme – it is a poor idea that needs to be removed. Throughout history human ideas have changed and evolved, with bad ideas (such as square wheels!) being rejected. Religion is the same – it is a bad idea that has no evolutionary benefit so needs to be discarded. A collection of these religious memes form a 'Mind Virus' where someone has belief in a religion. Dawkins suggest these ridiculous religious ideas from the past need to be dumped.
Religion & Social Control	<ul style="list-style-type: none"> One argument used against religion is that it is a form of social control, meaning that religion is created by humans and used to oppress those who are poor and weak by promising them a better afterlife. Examples include doom paintings from the middle ages that show horror images of hell and suffering, believers were told if they sinned they would be sent there for eternity, however if they lived a good life and endured the suffering as a test from God they would go to heaven. Some philosopher argue that this is just an excuse used to control the poor and stop them rebelling and fighting for a better life. Karl Marx was a prominent sociologist who studied the economics of society, he argued religion is meant to create illusory fantasies for the poor. Economic struggle prevent them from finding true happiness in this life, so religion tells them this is ok because they will find true happiness in the next life, religion makes people slaves and more accepting of the unfairness in society. He suggested we can only find true happiness when we discard old controlling religious beliefs and fight of equality. Friedrich Nietzsche was a German philosopher who wrote largely about Nihilism. Nihilism is the belief that all values are baseless and that nothing can be known or communicated. A true nihilist would believe in nothing, have no loyalties, and no purpose. At its core, the overriding belief that all life is meaningless. Nietzsche would argue that religion is just the creation of humans desperate to give life meaning, when in fact there is no meaning at all.

Key Word	Meaning
Supreme Spiritual Being	Belief in a god or gods, goddess or goddesses, a supreme being or divine spiritual principle which is the object or focus of the religion
Sense of Seriousness	A relationship between the believer and supreme being or entity by showing worship and/or a sense of clear seriousness and importance
Positive Moral Values	An identifiable positive beneficial moral or ethical framework
Alternative Religion	A new religious movements with modern origins often with a small number of followers
Cult	A religious, political or self-help movement often with extreme ideas that cause harm to the believer, either physically, emotionally or financially.
The Four Causes	The idea that everything in existence has a Material Cause (what it is made of) a Formal Cause (how it is designed) an Efficient Cause (how it got to that state) and a Final Cause (the end purpose and potential)
Final Cause	The God given purpose of all things – the purpose, potential and meaning of something
Natural Moral Law	A theory which suggests we should use human reason to make moral decisions based on promoting the Final Cause of all things
Innate Sense of God	The idea of God inbuilt into the human mind

Cultural Lens	The idea that our culture and experiences effect the way that we understand God
Anti-Theism	Active opposition and rejection of religion
Meme	An idea or concept that has no evolutionary benefit and is outdated
Mind Virus	A collection of memes that form together to create a religion
Social Control	Controlling people's behaviour by applying pressure or sanctions to maintain order in society

Quotes
'Reason in man is rather like God in the world' Aquinas
'The sun's light is refracted by the earth's atmosphere into the spectrum of the different colours of the rainbow. Perhaps the ultimate light of the universal divine presence (God) is refracted by our different human religious cultures into the spectrum of the different world faiths' Hick
'I think therefore I am' Descartes
'I am against religion as it teaches us to be satisfied with not understanding the world' Dawkins
'Religion is the opiate of the masses' Marx
'You have your way. I have my way. As for the right way, the correct way, and the only way, it does not exist' Nietzsche

Holidays – French KO

Key Vocab	
les vacances	holidays
au bord de la mer	by the sea
à la campagne	in the countryside
à la montagne	in the mountains
en train	by train
en voiture	by car
en bateau	by boat
en avion	by plane
en car	by coach
l'auberge de jeunesse	youth hostel
l'hôtel	hotel
le camping	campsite
la semaine	week
le jour	day
le mois	month
la plage	beach
la mer	sea
le restaurant	restaurant
la piscine	swimming pool
Key Verbs	
voyager	to travel
rester	to stay
aller	to go
réserver	to book
passer	to spend (time)
visiter	to visit
loger	to stay (hotel etc)

Countries	
la France	-France
la Suisse	-Switzerland
l'Espagne	-Spain
le Portugal	-Portugal
l'Allemagne	-Germany
le Pays de Galles	-Wales
l'Écosse	-Scotland
l'Angleterre	-England
l'Irlande	-Ireland
l'Italie	-Italy
les États-Unis	-USA
Infinitives - Holiday activities	
nager	-to swim
jouer au tennis	-to play tennis
faire de la planche à voile	-to go windsurfing
faire du VTT	-to go mountain biking
faire du ski nautique	-to go water skiing
faire du canoë	-to go canoeing
faire de la voile	-to go sailing
aller à la pêche	-to go fishing
faire une randonnée	-to go hiking
faire du ski	-to go skiing
faire des promenades	-to go for walks
faire du kayak	-to go kayaking
bronzer	-to sunbathe
Booking Accommodation	
Je voudrais réserver	-I would like to reserve
une chambre	-a room
avec douche/ balcon	-with a shower/ balcony
pour trois nuits/ une semaine	-for 3 nights/ one week
pour deux personnes	-for 2 people
il y a une piscine ?	-Is there a pool ?
Weather	
Il fait beau	the weather is lovely
Il fait froid	the weather is cold
Il fait chaud	the weather is hot
Il y a du soleil	the weather is sunny
Il y a du vent	it's windy
Il y a des orages	it's stormy
Il y a du brouillard	the weather is foggy
Il pleut	it's raining
Il neige	it's snowing

Past (Perfect) Tense avoir + past participle eg. J'ai nagé - I swam	
nagé	swam
bronzé	sunbathed
joué	played
mangé	ate
acheté	bought
regardé	watched
fait	did
voyagé	travelled
visité	visited
logé	stayed
OR être + past participle eg. Je suis allé (e) - I went	
resté	stayed
allé	went
sorti	went out
parti	left/deperted
Future Tense aller (to go) + infinitive	
je vais	I'm going
tu vas	you are going
i / elle va	he/ she is going
nous allons	we are going
ils vont	they are going

KNOWLEDGE ORGANISER - YEAR 8 GERMAN – HALF TERM 1 (SEPT - (OCT)

GENERAL "TRANSFERABLE" VOCABULARY

Hallo	Danke Schön
Prima	Sehr Gut
Guten	Auf
Tag	Wiedersehen
Toll	Gut
Bitte	Tschüss
Wunderb	Nicht Gut
ar	Schlecht

am ersten	on the first
am zweiten	on the second
am dritten	on the third
am vierten	on the fourth
am zehnten	on the tenth
am neunzehnt	on the 19th
am zwanzigste	on the 20th
am einunddreißigsten	on the 31st

auch =	aber = but
also	und = and
oder = or	

Die Tage der Woche = days of the week

Montag = Monday
 Dienstag = Tuesday
 Mittwoch = Wednesday
 Donnerstag = Thursday
 Freitag = Friday
 Samstag = Saturday
 Sonntag = Sunday
 das Wochenende = the weekend

Die Monate (months)

Januar = January
 Februar = February
 März = March
 April = April
 Mai = May
 Juni = June
 Juli = Juli
 August = August
 September = September
 Oktober = October
 November = November
 Dezember = December

0 null
 1 Eins
 2 Zwei
 3 Drei
 4 Vier
 5 Fünf
 6 Sechs
 7 Sieben
 8 Acht
 9 Neun
 10 Zehn
 11 Elf
 12 Zwölf
 13 Dreizehn
 14 vierzehn
 15 Fünfzehn
 16 Sechzehn
 17 Siebzehn
 18 Achtzehn
 19 Neunzehn
 20 Zwanzig
 21 Einundzwanzig
 22 Zweiundzwanzig
 23 Dreiundzwanzig
 24 Vierundzwanzig
 25 Fünfundzwanzig
 26 Sechsendzwanzig
 27 Siebendzwanzig
 28 Achtundzwanzig
 29 Neunundzwanzig
 30 Dreißig
 31 Einunddreißig

Some classroom language to help!

Haben Sie ein / eine / ein... bitte?
 Do you have a ... please?

Darf ich meine Jacke ausziehen?
 May I take my blazer off?

Darf ich auf die Toilette gehen?
 May I go to the toilet?

Darf ich einen Klebstift haben?
 May I have a glue stick?

Topic specific vocabulary

der Bleistift = the pencil
die Schere = the scissors
das Buch = the textbook
das Heft = the exercise book
der Klebstift = the glue stick
der Kuli = the pen
das Lineal = the ruler
das Etui = the pencil case
das Wörterbuch = the dictionary
die Schultasche = the schoolbag

die Familie = family
die Mutter / Stiefmutter = mum / stepmum
der Vater / Stiefvater = dad / stepdad
der Bruder / die Brüder = brother / brothers
die Schwester/ die Schwestern = sister / sisters
der Halbbruder / der Stiefbruder = half / step brother
die Grossmutter / die Oma = grandma
der Grossvater / der Opa = grandpa
die Tante = the aunt
der Onkel = the uncle

Key questions & answers

Wie heisst du?	What is your name?
Ich heisse ...	I am called...
Mein Name ist...	My name is...
Wie alt bist du?	How old are you?
Ich bin ... Jahre alt	I am ... years old
Wo wohnst du?	Where do you live?
Ich wohne in ...	I live in...
Wann hast du Geburtstag?	When is your birthday?
Ich habe am Geburtstag	My birthday is on...
Was ist das?	What is that / it?
Das ist....	That's / It's...
Wie geht's?	How are you?
Es geht mir...	I am ...
Wie sagt man... auf Deutsch?	How do you say... in German?
Und dir?	And you?

Grammar - In German, ALL nouns (names of things or places) are either MASCULINE (der), FEMININE (die), NEUTER (das) or PLURAL (die).

Examples

der Tisch = the table
 ein Tisch = a table
 die Schere = the scissors
 eine Schere = a pair of scissors
 das Heft = the exercise book
 ein Heft = an exercise book
 die Schüler = the pupils

So:

der, die, das and **die** = THE
ein, eine and **ein** = A / AN

Kein = no / not a

The verb **HABEN** (to have):

Er / Sie hat = He / she has

Ich habe = I have

ALL NOUNS ARE WRITTEN WITH A CAPITAL LETTER

Knowledge Organiser - German Year 8 Half Term2

Wie siehst du aus? What do you look like?

Ich habe....	I have....
blaue Augen	blue eyes
braune Augen	brown eye
grüne Augen	green eyes
graue Augen	grey eyes
braune Haare	brown hair
schwarze Haare	black hair
blonde Haare	blond hair
rote Haare	red hair
lange Haare	long hair
kurze Haare	short hair
lockige Haare	curly hair
glatte Haare	straight hair
wellige Haare	wavy hair

haben	to have
ich habe	I have
er/sie/Peter hat	he/she/Peter has
wir haben	we have
sie haben	they have

sein	to be
ich bin	I am
er/sie/Peter ist	he/she/Peter is
wir sind	we are
sie sind	they are

Hast du Haustiere?

einen Hund	a dog
einen Goldfisch	a goldfish
einen Hamster	a hamster
einen Vogel	a bird
einen Wellensittich	a budgie
eine Katze	a cat
eine Maus	a mouse
eine Schildkröte	a tortoise
eine Schlange	a snake
eine Spinne	a spider
ein Kaninchen	a rabbit
ein Meerschweinchen	a guinea pig
ein Pferd	a horse
Ich habe keine Haustiere	I have no pets

Ich habe einen Hund	der Hund (m)
Ich habe eine Katze	die Katze (f)
Ich habe ein Pferd	das Pferd (nt)
Ich habe 3 Hamster	(plural)

Negative:

Ich habe keinen Hund	I don't have a dog
Ich habe keine Katze	
Ich habe kein Pferd	
Ich habe keine Hamster	

Do you have pets?

Wie bist du?

Ich bin....	I am...
lustig	funny
laut	loud
schüchtern	shy
intelligent	intelligent
sportlich	sporty
musikalisch	musical
kreativ	creative
faul	lazy
launisch	moody
unpünktlich	unpunctual
groß	big
mittelgroß	medium height
klein	small
schlank	slim
kräftig	strong
dick	fat

How are you?

Qualifiers:

sehr	very
ziemlich	quite
nicht	not
etwas	a little
oft	often
manchmal	sometimes
nie	never
immer	always

Knowledge Organiser Year 8 - German Half Term 3

Sport	Sports
Ich spiele.....	I play...
Basketball	basketball
Federball	badminton
Fußball	football
Rugby	rugby
Tennis	tennis
Tischtennis	table tennis
Volleyball	volleyball
Ich gehe.....	I go...
reiten	riding
angeln	fishing
klettern	climbing
schwimmen	swimming
segeln	sailing
windsurfen	windsurfing
wandern	walking
Wildwasserfahren	whitewater rafting
Kanu fahren	canoeing
Snowboard fahren	snowboarding
Mountainbike fahren	mountain biking

Ich spiele gern...	I like to play...
Ich spiele nicht gern....	I don't like to play...
Ich möchte ...spielen	I would like to play...
Mein Lieblingssport ist...	My favourite sport is..
Man kann spielen.	You can play....
Man kann nicht ... spielen	You can't play...

Freizeit	Freetime
Ich spiele...	I play...
Computerspiele	computer games
Gitarre	guitar
Klavier	piano
Ich gehe...	I go....
in die Stadt	into town
in den Jugendclub	to the youth club
ins Kino	to the cinema
Ich besuche Freunde	I visit friends
Ich fahre Rad	I cycle
Ich faulenze	I laze about
Ich höre Musik	I listen to music
Ich lese	I read
Ich sehe fern	I watch Tv
Ich tanze	I dance

Time phrases:	
jeden Tag	every day
einmal pro Woche	once per week
am Wochenende	at the weekend
oft	often
immer	always
manchmal	sometimes
ab und zu	now and then
nie	never
selten	rarely
Ich spiele nie Rugby	I never play Rugby

Regular verbs:	
spielen	to play
ich spiele	I play
er/sie/Peter spielt	he/she/Peter plays
wir spielen	we play
sie spielen	they play
Irregular Verbs	
lesen	to read
ich lese	I read
er/sie/Peter liest	he/she/Peter reads
wir lesen	we read
sie lesen	they read
fahren	to travel
ich fahre	I travel
er/sie/Peter fährt	he/she/Peter travels
wir fahren	we travel
sie fahren	they travel
Key infinitives	
spielen	to play
fahren	to travel
gehen	to go
lesen	to read
sehen	to see
hören	to listen
besuchen	to visit
machen	to do/make
tanzen	to dance
faulenzen	to laze about

Tú y Yo

Cómo te llamas —what are you called

Me llamo- I am called

Dónde vives —Where do you live

Vivo en Lymm —I live in Lymm

Qué tal? - How are you?

Bien, gracias —fine thanks

Fenomenal —great

Regular—not bad

Fatal — awful

Y tú? - and you?

Cúantos anos tienes? - How old are you?

Tengo 12 anos —I am 12 years old

Cuándo es tu cumpleaños? - When is your birthday?

Mi cumpleaños es el quince de mayo —my birthday is the 15th of May

Feliz cumpleaños! - Happy birthday

Greetings

Hola —Hello

Buenos días —good morning

Buenas tardes —Good afternoon

Buenas noches —good evening

Adiós—goodbye

Hasta luego —See you later

Preguntas

Cómo te llamas?

Dónde vives?

Cuántos anos tienes

Qué tal?

Los números

Cero	0
Uno	1
Dos	2
Tres	3
Cuatro	4
Cinco	5
Seis	6
Siete	7
Ocho	8
Nueve	9
Diez	10
Once	11
Doce	12
Trece	13
Catorce	14
Quince	15
Dieciséis	16
Diecisiete	17
Dieciocho	18
Diecinueve	19
Veinte	20

Veintiuno	21
Veintidós	22
Veintitrés	23
Veinticuatro	24
Veinticinco	25
Veintiséis	26
Veintisiete	27
Veintiocho	28
Veintinueve	29
Treinta	30
Treinta y uno	31
Treinta y dos	32

Los meses

enero	January
febrero	February
marzo	March
abril	April
mayo	May
junio	June
julio	July
agosto	August
septiembre	September
octubre	October
noviembre	November
diciembre	December

En mi mochila

un boli - a pen

un cuaderno - an exercise book

un libro - a text book

un diccionario - a dictionary

un lápiz - a pencil

un estuche - a pencil case

un móvil - a mobile phone

un sacapuntas - a sharpener

una agenda - a diary

una calculadora - a calculator

una goma - a rubber

una mochila - a schoolbag

una regla - a ruler

Useful Words

sí yes

no no

y and

pero but

también also

tengo I have

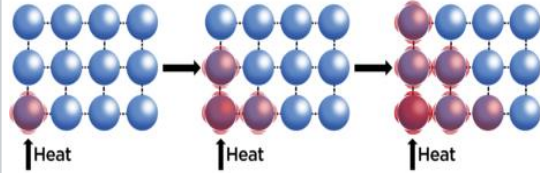
necesito I need

hay there is/there are

HT1 Year 8 Spanish Self, Family and Friends

Conduction is the way that heat travels through a solid. Conduction occurs slightly differently in metals compared to non-metals.

In non-metals, when the object is heated, energy is transferred. This energy causes the atoms in the solid to vibrate more than they were doing beforehand. These vibrations pass on to the neighbouring atoms and the vibrations spread throughout the material. This is quite slow, which is why non-metals do not heat up very quickly.



In metals, conduction occurs quickly. Metals have free electrons which move randomly throughout the metal. When the metal is heated up, energy transfers to the free electrons which move around the metal faster. These collide with the ions in the metal and transfer that energy. Some metals conduct heat better than other metals.

Conductivity of different materials can be investigated by monitoring how efficiently heat transfers along them.

Alternative energy sources usually refer to energy sources that are not based on traditional methods of burning fossil fuels. A lot of research is going in to alternative energy sources that can reduce and even eliminate our dependence on fossil fuels. Most alternative energy is renewable, meaning we will not run out of the energy source. Some alternative energy sources are: Wind, Solar, Hydroelectric, Geothermal, Wave, Tidal.

Nuclear energy is where we use the power of the atomic nucleus to generate electricity. Nuclear fission is where unstable elements such as uranium are split. This generates heat which can be used to make electricity. The problem with nuclear fission is that it produces radioactive waste. Recently, scientists have been trying to find out if nuclear fusion will also work. This is where hydrogen is fused in to helium and energy is produced. At the moment, this is not sustainable as the conditions needed to make it work are very hard to create.

Y8 Physics T1 - Energy

The Law of conservation of energy states energy can not be created or destroyed. Energy is simply transferred from one place to another.

Energy transformations can be tracked through systems. For example, a battery in a torch transfers chemical potential energy in to light and heat energy. Energy is measured in Joules (J).

Energy may be categorised in to different forms. "Potential" energies are stores of energy. These are:

- Chemical potential energy**
- Gravitational potential energy**
- Elastic potential energy**
- Nuclear potential energy**

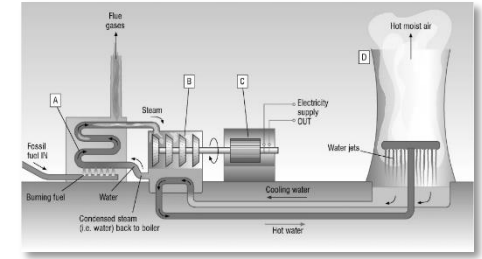
When energy is stored as a "potential" energy, it has the capacity to transfer energy elsewhere.

For example, the more you stretch an elastic band, the greater the store of elastic potential energy.

When it is released, its elastic potential energy is transferred in to kinetic energy. The more it is stretched, the more kinetic energy is transferred.

The thermal conductivity of a substance refers to the ease with which heat will pass through it. Generally speaking, metals have high thermal conductivities (good conductors of heat) and non-metals have poor thermal conductivities (good insulators of heat). To test the thermal conductivities of materials, hot water can be placed in beakers and wrapped in different materials. The greater the temperature decrease over time, the better the thermal conductor because more heat has passed through it.

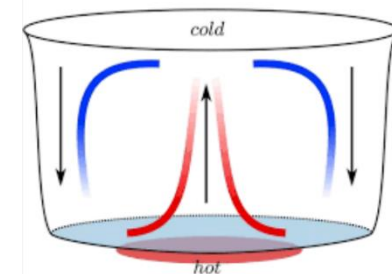
A coal power station works on the basis of burning coal in order to heat water and produce steam. When steam is generated, it is fired through a steam line and is directed at a turbine. The turbine spins round as a result of the force of the steam colliding with it. Since the generator is connected to the turbine, the generator then spins as well. The generator generates electricity when it spins.



When fossil fuels are burnt they produce greenhouse gases such as carbon dioxide and sulphur dioxide. Fossil fuels are also non-renewable, meaning that we are using them faster than they are being replaced. There are environmental risks associated with the over use of fossil fuels, including climate change, acid rain, melting of ice caps due to global warming.

Convection is the transfer of heat through fluids. Fluids are either liquids or gases. When a liquid or gas is heated, energy is transferred to the molecules. The energy of the molecules increases and causes them to move around faster. This causes the density of the heated fluid to decrease and, as a consequence, the more dense fluid above sinks down. The less dense, heated fluid rises.

When the heated fluid is away from the energy source it cools down. This causes it to become more dense and so it sinks again. This motion is called a convection current.



Hazard warning symbols



in the laboratory and tankers carrying chemicals road all have to carry hazard warning labels to show when there is a chemical hazard. Some of the common warning signs are:



Moderate hazard

*Substance is an irritant or is harmful.
Not corrosive but will make the skin red or blister. Not as dangerous as toxic.*



Flammable

Catches fire easily.



Corrosive

*Attacks and destroys living tissues, such as skin and eyes.
Attacks metals.*



Acutely toxic

Can cause death if swallowed, breathed in or absorbed by skin.



Explosive

Substances that can self-react or detonate easily.

Naming salts

When acids react with metals or metal compounds they make salts. The name of the salt has two parts. The first part is the name of the metal and the second part comes from the type of acid.

Hydrochloric acid makes a **chloride**
Nitric acid makes a **nitrate**
Sulfuric acid makes a **sulfate**

Acids and alkalis

Acids taste sour and are often found in foods, common acids include vinegar and lemon juice. Fizzy drinks, pickles and spicy sauces also contain acids. Stronger acids such as sulphuric and nitric acids can be more dangerous and often they are **corrosive**.

Alkalis feel soapy. They are often used in cleaning products and can also be corrosive. Weak alkalis include soap and toothpaste.

Indicators

Indicators are coloured dyes which often come from plants such as red cabbage and beetroot. They change colours when added to acids and alkalis.

Litmus is an indicator which turns red in acids and blue in alkali. **Red cabbage** indicator is red in acids, purple when neutral and green in alkalis.

Most indicators only tell us if a substance is an acid or alkali; they don't tell us how strong or weak they are.

Universal indicator is a mixture of dyes that changes colour gradually, telling us the level of acidity or alkalinity of a substance. The colours can be linked to the pH scale.

The pH scale

The strengths of acids and alkalis can be measured on the **pH scale**, which runs from 1 to 14. pH numbers **1 to 6** are acids, **7** is neutral, and **8 to 14** are alkalis.

You can find out the pH number using a **universal indicator**, or by using a pH meter.

Metal carbonates and acids

A metal carbonate will also neutralise an acid. This time the products are a salt, carbon dioxide and water.

The general equation is:



For example:

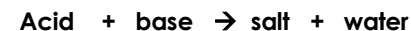


We can test for carbon dioxide using limewater. Limewater goes milky if carbon dioxide is bubbled through it.

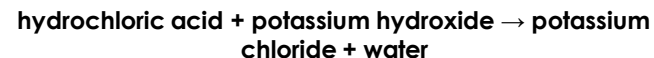
Y8 Chemistry: T1- Acids and Alkalis

Neutralisation

Metal oxides and hydroxides are referred to as **bases**. A **soluble base** (usually a metal hydroxide) is called an **alkali**. Bases can cancel out acids, making them **neutral**. A base reacts with an acid to form water and a salt. This reaction is called **neutralisation**.



For example:



We can check to see if neutralisation has occurred using universal indicator. The pH of the solution gets closer to neutral (pH7).

Neutralisation reactions can be important:

- in gardening and agriculture, to make sure the soil is the correct pH
- when dealing with insect stings and bites
- to control indigestion caused by excess acid in the stomach
- to neutralise lakes affected by acid rain.

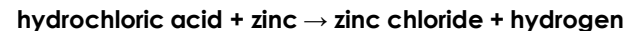
Metals and acids

Many metals react with acids. Some unreactive metals will only react very slowly with strong acids, some will not react at all. Some metals are more reactive and explode when added to acid.

When a metal reacts with an acid, hydrogen gas is given off. The reaction also produces a compound called a salt.



For example:



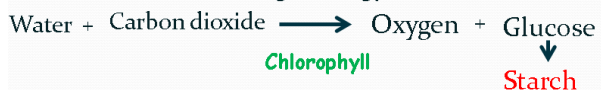
We can test for hydrogen by putting a burning splint into a test tube of gas. If hydrogen is present, it will explode with a squeaky 'pop'.

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Strong acid			Weak acid			Neutral	Weak alkali			Strong acid			
red			orange / yellow			green	green - blue			purple			

Photosynthesis

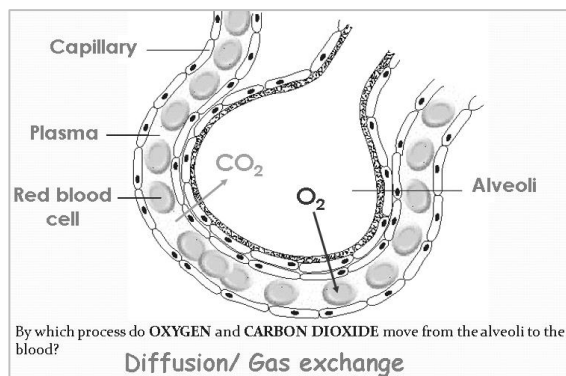
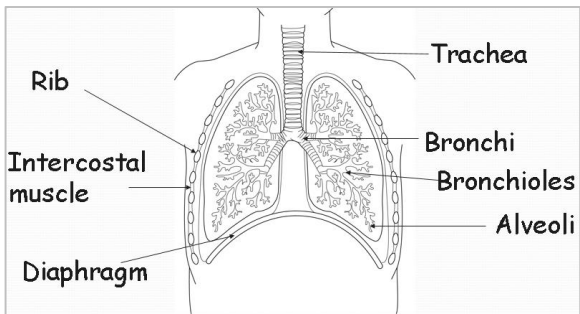
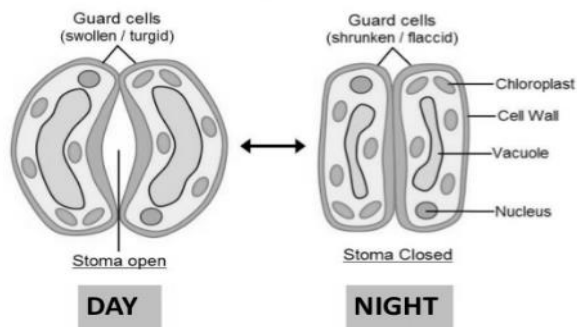
- It's a chemical process plants & algae use to make their own food (**glucose**)
- Photosynthesis takes place in the **CHLOROPLASTS** of plant cells.
- Light energy is absorbed by a green pigment called **CHLOROPHYLL**.

Light Energy



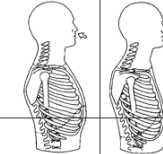
- A leaf is broad and flat to capture lots of sunlight.
- Veins carry water to the leaf and take food from the leaf to the rest of the plant.
- Certain plant cells contain chloroplasts filled with chlorophyll.
- Small holes called stomata in the underside of a leaf allow gases in and out.

When are stomata open and when are they closed?



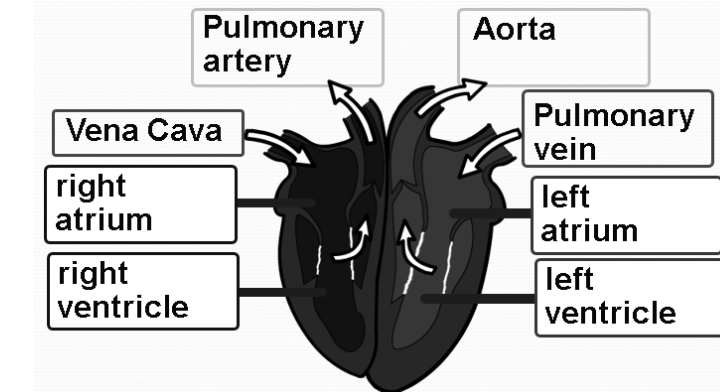
Y8 Bio T1- Bioenergetics

Inhalation



Exhalation

Ribs move up and out	How do the ribs move?	Ribs move down and in
Diaphragm moves down	How does the diaphragm move?	Diaphragm moves up
Pressure decreases in the chest	What happens to the pressure in the chest?	Pressure increases in the chest
Volume increases	What happens to the volume in the chest?	Volume decreases



red blood cell	carries oxygen around the body
white blood cell	engulfs invading pathogens
platelet	plays an important role in blood clotting
plasma	fluid which carries other blood components

artery	vein	capillary
carries blood away from heart	carries blood towards heart	carries blood to and from cells
has thick and elastic walls	contains valves	has thin, permeable walls
carries blood at high pressure	has a large lumen	

Changes to the body during exercise:

- Heart rate increases
- Stroke volume increases
- Breathing rate increases
- Deeper breaths
- Sweat
- Blood vessels dilate

Why does heart rate increase during exercise:

- More blood
- More glucose & oxygen to muscles
- More respiration= more energy
- More muscle contraction
- More CO2 removed
- More lactic acid oxidised

Aerobic respiration is the process of releasing energy.

Aerobic respiration happens in the **mitochondria**.

We need it for:

- ✓ Muscle contraction (moving)
- ✓ Making molecules (growth)
- ✓ Maintain a warm body temperature



During exercise, if **INSUFFICIENT OXYGEN** is reaching the muscles they use anaerobic respiration to obtain energy.

Anaerobic respiration is the **INCOMPLETE BREAKDOWN OF GLUCOSE**.

Database Knowledge Organiser

ID	First Name	Surname	Title	Gender	Date of Birth	Address	Town
1	Layla	Fong	Mrs	F	20/07/1982	27 Park Lane	Birmingham
2	Paige	Turner	Prof	F	11/01/1982	78 Manor Road	Chertsey
3	Americk	Patel	Dr	M	14/01/1982	14 York Avenue	York
4	Terry	McDougal	Dr	M	19/01/1982	19 South Avenue	London
5	Sam	Smith	Prof	M	15/01/1982	65 Park Road	Crediton
6	Mark	Smith	Prof	M	08/01/1954	38 The Lane	Worthing
7	Sarah	Scott	Miss	F	11/09/1990	76 Alexander Road	Burdon
8	Mark	Smith	Mr	M	20/02/1990	44 School Road	Tombridge
9	Richard	Dean	Prof	M	08/08/1978	2 Main Road	Deeside
10	Bethany	Jones	Miss	F	07/04/1987	68 Cross Hand Road	Peterborough
11	Chloe	Thomas	Dr	F	15/01/1975	62 York Lane	London
12	Veronica	Brown	Prof	F	16/02/1974	68 Netherlands Close	Woking
13	Stephen	Jones	Prof	M	01/04/1987	Windsor Street	Liverpool
14	Leah	Jackson	Dr	F	04/06/1984	Highwayman Road	Benhill-On-Sea
15	Simon	Morgan	Prof	M	24/08/1978	47 Winchester Road	Croydon
16	Stephen	Douglas	Mr	M	20/02/1988	70 Mainway	Liverpool
17	Nichola	Wilson	Prof	F	17/04/1963	18 Mainway	Bradford
18	Emily	King	Prof	F	11/05/1962	51 Kings	Walsend
19	Chloe	Davies	Prof	F	27/03/1968	55 Park	Walsend
20	Liam	Wright	Dr	M	01/12/1957	50 Mainway	Walsend

	Advantages	Disadvantages
Paper based	<ul style="list-style-type: none"> • Can carry them around with you. • Don't need training to learn how to use them. • Cheap to set up. 	<ul style="list-style-type: none"> • Can be lost. • Can't easily make backup copies. • Hard to update or make changes.
Computerised	<ul style="list-style-type: none"> • Can easily make backup copies. • Can easily make changes. • Can easily sort data into order e.g. Alphabetic. • Can search for particular records very quickly. 	<ul style="list-style-type: none"> • Can be expensive to set up if you have to get a professional to make it. • If there is a power-cut, you can't use it. • You need to have a computer.

Key terms	Definition
Flat file database	When a database has only one table and everything is stored in that one table it is called a "flat-file database".
Relational database	Many databases which are used in organisations are known as "relational databases". This means that the database contains more than one table and these are linked together.
Unique/primary field	A "Primary Key" is a field which allows the user to uniquely identify a record in a table.
Foreign Key	A link to a primary key in a relational database table.
Entity	An object, eg a person or film. In databases, entities are the subjects whose attributes are stored as records.
Query	A search or question performed inside a database.

Data Types		
Type	Examples	Description
Text	Smith, Red, PE23 5AW	Strings of letters or a mixture of letters and number or just numbers that do not need to be used in calculations
Number	1, 23.67, -0.23	Numbers can include positive or negative numbers and decimal places
Date/Time	15/2/2001, 12:45 am	Dates in many different formats or time values
Currency	£45.99	Numbers including the symbol for monetary values
Boolean	Yes or No, True or False	Values which are either Yes or No, True or False or On or Off
AutoNumber	1,2,3	Generates a number automatically

Hardware needed to connect to the internet:

A computer network is: Two or more computers connected together to share information and resources.

Hub
A device that connects nodes together.
Not intelligent – data is sent to all nodes across the **whole of the network**.
Cheap devices – **USB hubs** useful in home computer installations.

Switch
• A device that connects nodes together.
• An **intelligent device** that can send data to the nodes that the data is intended for.
• This **reduces network traffic** because making the **network run faster**.

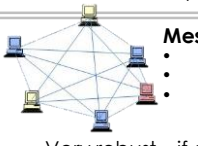
If the LAN is to connect to the Internet, a router is needed.
Routers work by sending data between networks (e.g. over the internet)

WAN -Wide Area Network
• Covers a large geographical area – may be worldwide
• Devices may be provided by telecoms companies like phone lines and satellites

A LAN is a **Local Area Network**.
• It is a connected set of computers and other devices.
• Each device is called a node (e.g. computer, printer, etc.)
• A LAN is installed on one site.
• Relatively small
• It is owned by the organisation

Advantages
• It allows communication between workers or students
• It allows data to be shared
• It allows peripherals (e.g. printers) to be shared
• It allows computers to be upgraded more easily
• It allows distributed processing – the ability for a single program to be run simultaneously at various computers.

Disadvantages
• Expertise required to set up and maintain a large network (costly)
• Security issues from unauthorised access to data
• Measures to secure a network include:
• Passwords – strong passwords use a range of character types
• Changing passwords frequently
• Not allowing users to install software
• With wireless access, use encryption



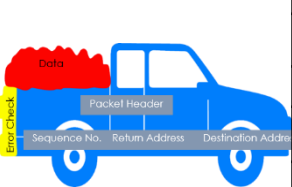
Mesh topology
• Each node relays the data it receives to other nodes within reach.
• There is **no** central node in a mesh network.
• Using cables means the network would become too expensive. However, using wireless a mesh offers a lot more advantages over a star network, such as:
○ Very robust – if one node fails the other nodes within range allow data transmission around the network to continue.
○ Excellent wireless range.

Advantages:
Lower Cost – no need to purchase hardware or software licences and you only pay for what you need.
Better Performance – Processing time on demand.
Less maintenance – somebody else manages the servers and core software.
Unlimited storage capacity – Use it when you need it.

Disadvantages
Requires a constant connection – if the connection is lost then the system will not work.
Loss of control – The problem of somebody else controlling the hardware and software may result in security concerns.
Unpredictable cost – the cost may fluctuate each month which may cause problems with budgeting in the future.



Data Packets:
Files are split into millions of **data packets** when sent across a network or the internet. Packets get sent by different routes according to availability. When you send a file online, the parts of the file might travel one way around the world and the other parts may go in the opposite direction! Packets are reassembled at receiving end.
Typical packet structure:



Y8: Networks and Technology

Key term	Definition
Network	Two or more computers connected together to share data and devices
LAN	A network over a small (local) area (building or site)
Network Interface Card	A piece of hardware which converts computer signals into a form that can be sent over a network (and convert them back when network data is received)
Switch	A device which passes networked data to the correct nodes
Peripheral	Something that is on the edge of or attached to the computer, e.g. printer, mouse, keyboard, etc.
Local area network (LAN)	This is a network within a single building.
Wide area network (WAN)	This is a network over a wider geographical area such as in different buildings, cities or even countries.
Internet	The Internet is a huge world wide network which allows computers to communicate and share information.
Modem	This stands for Modulator Demodulator. It converts a digital signal (that the computer uses) into an analogue signal which can be transferred down traditional telephone lines and then converted back into a digital format at the other end so that the computer can read it again.
Network Card	This is a card which is built into the computer and slots into the motherboard. It provides a socket at the back of the computer for the network cable or to receive the wireless signals.
Internet Service Provider (ISP)	The company that provides you with access to the internet – depending on the service it might be free or involve making regular payments to subscribe.
Internet protocol (IP)	IP stands for Internet Protocol, which means the rules that networks have agreed to so that they can communicate easily with each other.
Data Packets	These are created from the splitting up of a file when data is sent across the internet. It is reassembled at the receivers' end to reform the file.
Computer virus	A computer virus enters your system without your knowledge and can then copy itself to other computers. They are usually transferred to other computers and can be caught by transferring files through a USB drive or more commonly through attachments sent with emails. Most computer viruses will alter, delete or damage the files in the computer system.
Virus Checker	Antivirus software should be installed on your system to scan for threats and quarantine potential viruses.
Worms	Worms can do as much damage as viruses but the important difference is how they are spread around a system. They creep around the network automatically, copying themselves and slowing it down.

Trojan horse	A Trojan horse is software that pretends to be something useful, so the user downloads it, but actually it does something else.
Spyware	Spyware collects information about users so that it can be used for fraudulent purposes.
Keylogger	Keylogger software is used to record the user's keystrokes and can find out peoples passwords, bank details, etc.
Adware	Adware is software that is automatically downloaded and installed on your computer so you are directed to advertising material.
Input device	Input Devices: these are used to control the computer and are used to put data into the system.
Output device	These get something out of the computer for instance data or sound.
Storage device	These are used to save data onto and can be inside the computer or portable so the data can be taken with the user.
Operation Software	Used to control the workings of a computer, e.g. Windows 10
Application software	Installed onto the computer to perform a specific task such as creating documents or spreadsheets.
Utilities software	These carry out specific tasks which help the computer system run efficiently such as virus checking and Winzip.
Cloud computing	The practice of using a network of remote servers hosted on the Internet to store, manage, and process data, rather than a local server or a personal computer.
Workstation	This is a desktop computer, where you complete your work. It is connected to the network.

When you analyse two or more existing websites you have browsed, you can normally comment on:

- **House style** – How the website uses image, colour, etc. to portray their organisation.
- **Audience** – Who the website is aimed at.
- **Size** – How many pages there are on the website (try to find something called a 'site map').
- **Techniques** – What design skills were used in producing the web pages.
- **Search** – You can look at search engine rankings when you search for a website and you can look at the accuracy of a search box on the website itself.

HomePage

Test	User Requirement Addressed	Expected Result	Actual Result	Pass / Fail	Date	Corrective Action
Logo Displayed	The website uses the companies house style	CompuTech logo is displayed	As expected	Pass	01/12/09	None
Navigation Bar Appears	Website is easy to navigate	Navigation bar appears	As expected	Pass	01/12/09	None
Navigation Bar Drop Downs Work	Website is easy to navigate	When mouse goes over labels - menus drop down	As expected	Pass	01/12/09	None
Navigation Bar Hyperlinks Work	Website is easy to navigate	When mouse goes over turns to red and can click on it to take you to correct page	As expected	Pass	01/12/09	None

Test plan table: example

Key term	Definition
Accessibility	This is the capacity of a website to be used by people with disabilities, including visually impaired visitors using screen readers, hearing impaired visitors using no sound, colour blind people, or those with other disabilities. A website with low accessibility is going to be potentially impossible for those with disabilities to use.
Anchor Text	The words that appear clickable in a text link. Usually used to take the user to top of the page or bottom of page when clicked.
Browser	This refers to the program a website visitor is using to view the web site. Examples include Safari, Firefox, Google Chrome, Opera, and Internet Explorer.
Navigation	Navigation refers to the system that allows visitors to a website to move around that site. Navigation is most often thought of in terms of menus, but links within pages, breadcrumbs, related links, pagination, and any other links that allow a visitor to move from one page to another are included in navigation.
Site plan	A site map is a model of a website's content designed to help both users and search engines navigate the site.
House style	How the website uses image, colour, etc. to portray their organisation.
Navigation bar	A series of common menus or buttons should be added to each page for consistency
Hyperlink	Hyperlinks enable you to move from one page to another page. These can be graphical (whole-image links), hotspots (where different parts of an image take you to different pages), rollover buttons (buttons which change colour when you move your cursor over them), or polygon links (links using different shapes). We can also use anchors to take us to different parts of one, very long web page.
Banners	These are usually animated advertisements. Leader board banners appear at the top of each page and skyscraper banners appear down the side.
Hotspots/image maps	Where different parts of an image take you to different pages
Rollover images	Buttons which change colour when you move your cursor over them
Radio buttons	A radio button is an element of the graphical user interface (GUI) which allows a user to select a single item from a predefined list of options.
Drop-down menus	A drop-down menu, drop menu, pull-down list, picklist) is a graphical control element, similar to a list box, that allows the user to choose one value from a list
Templates	Master pages enable you to create a basic outline of how each page on your site will look. All new pages can then use this template to create a consistent structure.
Homepage	This is the first page visitors will see and should link to the other pages.

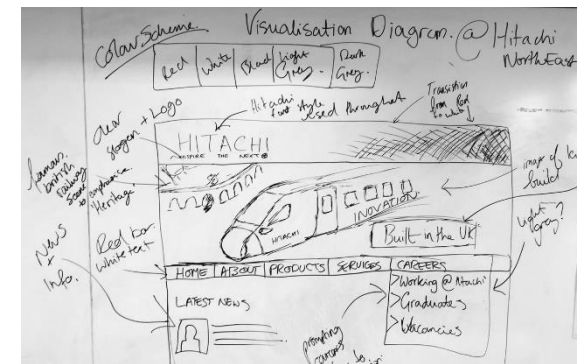
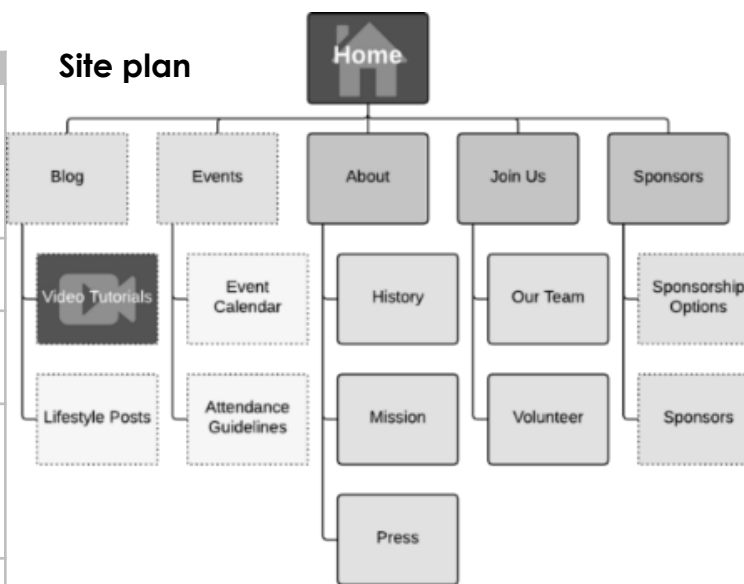
Y8: Websites

Visualisation Diagram

Key term	Definition
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Site plan



Work Plan

Task Name	Duration	Start	Finish
1 Preliminary Tasks	17 days?	Mon 8 09:03	Tue 30 09
2 Analysis tasks	50 days?	Mon 8 09:03	Fri 14 11
2.1 gather data	50 days?	Mon 8 09:03	Fri 14 11
2.2 analyse data	1 day?	Mon 8 09:03	Mon 8 05
2.3 develop business requirements report	1 day?	Mon 8 09:03	Mon 8 05
2.4 develop technical requirements report	1 day?	Mon 8 09:03	Mon 8 05
3 Design tasks	1 day?	Mon 8 09:03	Mon 8 09
3.1 develop site map	1 day?	Mon 8 09:03	Mon 8 05
3.2 develop storyboard	1 day?	Mon 8 09:03	Mon 8 05
3.3 develop navigation map	1 day?	Mon 8 09:03	Mon 8 05
3.4 document and submit design	1 day?	Mon 8 09:03	Mon 8 05
4 Implementation tasks	144 days?	Mon 8 09:03	Fri 26 03
4.1 develop templates	1 day?	Tue 24 02:04	Tue 24 02
4.2 develop navigation systems	0.5 days?	Fri 27 02:04	Fri 27 02
4.3 develop scripts	0 days?	Fri 26 03:04	Fri 26 03
4.4 develop multimedia elements	0 days?	Fri 26 03:04	Fri 26 03
4.5 develop pages	1 day?	Mon 8 09:03	Mon 8 05
5 Testing Tasks	224.33 days?	Mon 8 09:03	Fri 16 07
5.1 test against technical requirements	0.33 days?	Fri 16 07:04	Fri 16 07
5.2 conduct usability testing	0 days?	Fri 16 07:04	Fri 16 07
5.3 conduct client acceptance test	1 day?	Mon 8 09:03	Mon 8 05

Assets table

Asset	Where found	P/S *	Details of permission if used	Details of editing (how assets have been developed to make them suitable)	Where used (be specific, which part of the game have you used the asset?)
	https://www.flickr.com/photos/lexturex/8412862833/	S	It was labeled for re-use so I have permission to use it.	I have cropped it so it fits the size that game maker uses.	I used it for the background of my main menu screen, loading, backstory, instruction, winner and looser screen. It is also used for my instruction manual and my banner for my website.
	I created this on adobe illustrator.	P	I made it so I own the copy rights over it.	I made it using various different shapes.	I used it as my logo so is on my main menu screen, loading, backstory, instruction, winner and looser screen.

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- **Audience** – Who the website is aimed at.
- **Size** – How many pages there on the website (try to find something called a 'site map').
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Y8: Flowcharts and sequencing

Christmas lights flowchart

Key term and definition

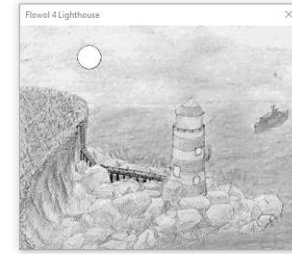
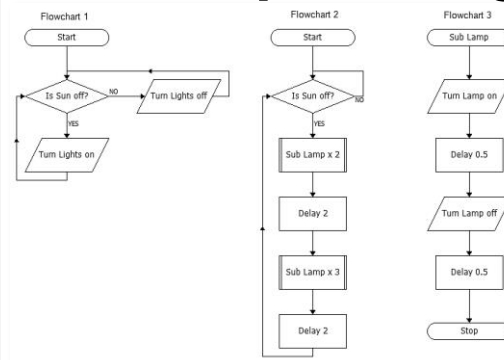
Application	A device or program enabling a user to communicate with a computer.
Mimic	Controllable pictures which respond visually and realistically to commands the user has inputted.
Control	Computer control means that a computer is part of the control system. The computer is normally used to run the control program.
Monitoring	The process of being aware of what is happening around you, in this case the computer system monitors the control system to check it is working correctly.
Sensor	A sensor is a device which is designed to measure some physical quantity in its environment, an example is a heat sensor that measures the room temperature.
Subroutine	In computer programming, a subroutine is a sequence of program instructions that perform a specific task, packaged as a unit.
Actuator	A hardware device that moves or controls a mechanism. A motor is an actuator.
Sequence	Sequencing is the specific order in which instructions are performed in an algorithm.
Selection	A decision within a computer program when the program decides to move on based on the results of an event.
Iteration	In computer programming, this is a single pass through a set of instructions.
Flowchart	A diagram that shows a process, made up of boxes representing steps, decision, inputs and outputs.
Algorithm	A sequence of logical instructions for carrying out a task. In computing, algorithms are needed to design computer programs.

What is a system flowchart?

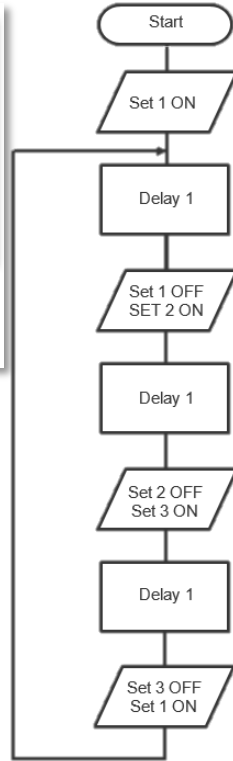
System flowcharts are a way of displaying how data flows in a system and how decisions are made to control events. To illustrate this, symbols are used. They are connected together to show what happens to data and where it goes.

Symbols linked together form a flowchart. Flowchart programming consists of:

- sequences of instructions that lead to a real-life simulation
- decisions that result in two different actions
- loops that repeat an action until a certain condition is met
- variables that store data for use in decision making



Lighthouse solution



Basic flowchart symbols

Name	Symbol	Usage
Terminator		Starts or stops a process.
Input or output		An input is <i>data</i> received by a computer. An output is a <i>signal</i> or data sent from a computer.
Process		An instruction or a command.
Decision		A decision, either yes or no. For example, a decision based on temperature that turns a central heating system on or off.
Line tool		Connects the symbols. The arrow indicates direction.

Sensors

Sensor	Measures	Where Used
Heat	Temperature	Living room for central heating system
Humidity	Water vapour in the air	Swimming pool, greenhouse
Infra-red	Infra-red radiation e.g. body heat	Security alarm systems
Light	Light levels	External security lights
PH	Acid/alkali levels e.g. pH of soil	Environmental experiments, river pollution
Pressure	Pressure	Burglar alarm systems, automatic doors
Smoke	Smoke in the atmosphere	Offices
Sound	Levels of sound	Security alarm systems
Tilt	Angle of tilt	Windows in security alarm system
Touch	Detects if one object bumps into another	Computer controlled robots

Computer control

Control technology is used to:

- operate systems, e.g. traffic lights
- control actions, e.g. a robot's movement
- create video games
- control manufacturing devices, e.g. laser cutters.

Computers follow instructions or sequences programmed into them. A flowchart can be used to help design a sequence.

Sensors are used to measure physical quantities such as temperature, light, pressure, sound, and humidity. They send signals to the processor. There are many items within our homes that use control systems. These include:

- electric kettles
- washing machines
- TV remotes
- TV recording devices

We **monitor** the system with the above sensors to make sure it is working properly.

Advantages

- ✓ Can operate 24 hours a day without taking a break.
- ✓ Can work without holidays or sick days.
- ✓ Will work without any wages.
- ✓ Will accurately repeat actions over and over again,
- ✓ Can process data from sensors very quickly.

Disadvantages

- x If the computer malfunctions then the system won't work.
- x If the power is cut then the system won't work.
- x The computer can't react to unexpected events like a person could.

Y8: Moose Production

Key vocabulary	Definition
Logo	A symbol or other small design adopted by a business to identify its products
Animated banner	Creating frames with timings attached to them so it appears like they are moving
Visualisation diagram	Plan of the final product.
Annotations	Labelling the diagram explain what you have done and why.
Formula	Mathematical expression, such as adding or averaging, that performs calculations on data in a spreadsheet
Functions	Predefined formula in a spreadsheet
Formatting	Making the spreadsheet look appealing to the user by adding colour, merging cells, etc.
Spreadsheet modelling	Computer models of mathematical data, such as budgets, are usually done using a spreadsheet application that processes and performs calculations on the data entered by the user.
House style	Consistent layout created when designing something so it doesn't draw the attention away from the message being put across.
Colour scheme	Looking at colours that match each other rather than just applying colours we like.

Operator	What does it do?	Function	Description
+	Addition	=SUM(A1:A7)	This would add up the cells from A1 to A7
-	Subtraction	=AVERAGE(A1:A7)	This would work out the average of cells A1 to A7
*	Multiply	=MIN(A1:A7)	This would find the lowest value from cells A1 to A7
/	Division	=MAX(A1:A7)	This would find the highest value from cells A1 to A7
All formula must start with =			

File formats

Video File Formats	<ul style="list-style-type: none"> MPG - Compressed file formats MOV - small file size MP4 - fast loading online
Audio File Formats	<ul style="list-style-type: none"> MP3 (compressed / small file sizes / good for devices) AIFF (uncompressed / high quality / Mac only) WAV (uncompressed / high quality / Windows only)
Image File Formats	<ul style="list-style-type: none"> JPG (lossless compression; photography) PNG (lossless compression; photography) TIF (large file sizes / Posters / high quality printing) PDF (un-editable/ Documents) GIF (small file sizes/ Online / web buttons)

Client requirements

Whether you are creating something for yourself or for a client, your project will have a set of client requirements.

Purpose of client requirements:

- Provide the media developer with outline information and any constraints (timescale)
- Clear statement of what is to be produced

Content of client requirements:

- Statement of what media product is needed
- Purpose of the media product
- Target audience
- Content
- Timescale
- Restrictions
- House style

Target audience

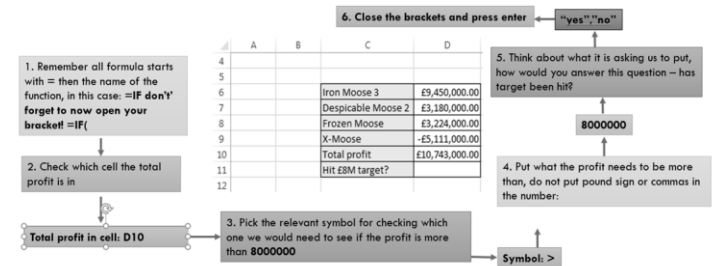
Who is the final product intended for?

Categories:

- Age - need to be clear about the age group. (E.G. 6-12, 12-18, 18-40, 40+)
- Gender
- Location - local, national, international
- Ethnicity - background, culture, race, religion, language

Moose Production IF statement

- Do an IF statement to see if the £8,000,000 target has been hit.
- Lets break this down:



Answer

=IF(D10>8000000,"Yes","No")

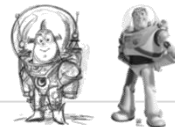
Visualisation diagrams

Purpose of a visualisation diagram:

- Plan the layout of a still image in a visual manner
- Show how the finished item may look

Content of a visualisation diagram:

- Multiple images and graphics showing size and position
- Colours and colour schemes
- Position and style of text
- Fonts to be used
- Annotation providing more detail



Research

- Primary sources: the information is obtained first hand from an original source
- Secondary sources: the information is obtained second hand where somebody else has created the data

An IF statement checks to see if a statement is **true or false** and then does one of two things depending on the result.

It looks like this in Excel: =IF(Condition check, Do this if true, Do this if false)

For example, consider this formula written in spreadsheet cell B1:

=IF(A1 > 0, "Profit", "Loss")

This checks to see if the value of cell A1 is more than zero. If it is, then the word "Profit" appears in cell B1 otherwise the word "Loss" appears.

Visualisation diagrams

Purpose of a visualisation diagram:

- Plan the layout of a still image in a visual manner
- Show how the finished item may look

Content of a visualisation diagram:

- Multiple images and graphics showing size and position
- Colours and colour schemes
- Position and style of text
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Research

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Work plans

Purpose of a work plan:

- Provide a timescale for the overall project to be completed
- To map out against time for all the different aspects of the project

Content of a work plan:

- Tasks
- Activities
- Durations – amount of time a task is expected to take
- Timescales – how long the project will take
- Milestones – key dates when a section is completed
- Deadlines – date when something has to be done by
- Resources – what is needed
- Contingencies – back up plan, extra time if needed

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Content of client requirements:

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- Purpose of the media product
- Target audience
- Content
- Timescale
- Restrictions
- House style

Storyboards

Purpose of a storyboard:

- Provide a visual representation of how a media project will look along a timeline
- Provide a graphical illustration of the sequence of movements
- Provide guidance on what scenes to film or create

Content of a storyboard:

- Images
- Locations
- Camera shot types and angles
- Camera movement
- Shot length and timings
- Lighting
- Sound

Research

- Primary sources: the information is obtained first hand from an original source
- Secondary sources: the information is obtained second hand where somebody else has created the data

Year 8 KO - Graphics

Lossy and Lossless

Compression can be **lossy** or **lossless**. Lossless compression means that as the file size is compressed, the picture quality remains the same - it does not get worse. Also, the file can be decompressed to its original quality. Lossy compression permanently removes data.

Primary Sources	Secondary sources
<ul style="list-style-type: none"> Autobiography First-hand account Diary Interview Video footage Photo Official records 	<ul style="list-style-type: none"> Biography Second-hand account History textbook Magazine article Report Other people's products News broadcast

Bitmap graphics

Bitmap graphics made with painting packages consist of many tiny dots called pixels. It is possible to edit each individual pixel. Since the computer has to store information about every single pixel (the colour for example) in the image, the file size of a bitmap graphic is often quite large. Bitmap graphics lose quality when they're resized.

Vector graphics

Vector graphics are based on mathematical relationships with control points that make up the image. Information is not stored about each pixel. These points are connected by lines and curves called vector paths or vectors.

A vector object is a shape made up of vector paths. It is possible to edit each object separately, for example, change the shape, stroke, fill, size and position. A stroke follows the outline of the vector path and a fill adds a colour to the area inside the path.

Advantages

Smaller file size
Scalable - when you resize a vector graphic the mathematical relationships mean that the image does not lose quality.

Disadvantage

Vector graphics are never going to be as lifelike as bitmaps or photos. They will always appear computer generated.

Image copyright ©

Before capturing and collecting images to use in your project, make sure you understand the law surrounding image copyright.

You can read about image copyright in the Copyright section of Managing Projects. Don't forget to acknowledge the copyright of the images you use in your project.

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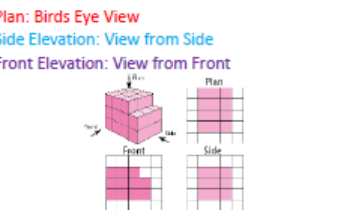
Year 8 Foundation

Percentage of Amounts without a Calculator:
 47% of £120
 $10\% = £12 \Rightarrow 40\% = £12 \times 4 = £48$
 $1\% = £1.20 \Rightarrow 7\% = £1.20 \times 7 = £8.40$
 Add these two answers together to get 47%:
 $£48 + £8.40 = £56.40$

Percentage Increase without a calculator
 1.) Increase £48 by 13%
 $13\% \text{ of } £48 = £6.24$
 2.) To increase, add on the £6.24.
New Amount = £48 + £6.24 = £54.24

Percentage Decrease without a calculator
 1.) Decrease £48 by 13%
 $13\% \text{ of } £48 = £6.24$
 2.) To decrease, subtract the £6.24.
New Amount = £48 - £6.24 = £41.76

Algebraic Terminology:
 Expression:
 $4x + 5y, 2x - 5, 7x(3x - 7)$ etc.
 Equation:
 $4x - 7 = 15, 4(3x + 1) = 7$ etc.
 Identity:
 $4(x - 2) = 4x - 8$ etc.
 Formula:
 $y = 3x - 1, \text{Area} = \pi r^2, V = b^3$ etc.
 Inequality:
 $4x - 1 < 11, 5x + 2 \geq 17$ etc.



Sample Space Diagrams

We use sample space diagrams to list all outcomes when carrying out two probability experiments at the same time

		Player 2					
		Rock	Paper	Scissors			
Player 1	Rock	RR	RP	RS			
	Paper	PR	PP	PS			
	Scissors	SR	SP	SS			

$P(\text{Scissors}) = \frac{3}{9} = \frac{1}{3}$ $P(\text{Prime}) = \frac{15}{36} = \frac{5}{12}$

+	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

Dividing into a Ratio:
 Share £480 in the ratio 3:5:4
 $3 + 5 + 4 = 12$
 $1 \text{ Part} = £480 \div 12 = £40$
 3 Parts = $£40 \times 3 = £120$
 5 Parts = $£40 \times 5 = £200$
 4 Parts = $£40 \times 4 = £160$
£120:£200:£160

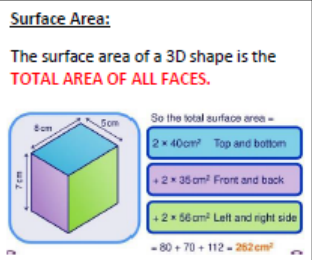
Recipes and Proportion:
8 People:
 400g Pasta
 2 Tins Chopped Tomatoes
 1 Onion
 4tbsp Tomato Puree

To find the recipe for 6 people, divide each amount by 8 and then multiply by 6:

6 People:
 $(400 \div 8) \times 6 = 300\text{g Pasta}$
 $(2 \div 8) \times 6 = 1.5 \text{ Tins Tomato}$
 $(1 \div 8) \times 6 = \frac{3}{4} \text{ Onion}$
 $(4 \div 8) \times 6 = 3\text{tbsp Puree}$

Substitution:
 Find the value of $3x + 5y$, when $x = 6$ and $y = -1$.
 $(3 \times 6) + (5 \times -1)$
 $= 18 - 5$
 $= 13$

If $y = 6x - 13$, find the value of y when $x = 1.5$.
 $y = (6 \times 1.5) - 13$
 $y = 9 - 13 = -4$



Percentage of Amounts with a Calculator:
 47% of £120
 $47\% \times 120 = £56.40$

Percentage Increase with a Calculator:
 Increase £48 by 13%
 $100\% + 13\% = 113\%$
 $113\% \times £48 = £54.24$

Percentage Decrease with a Calculator:
 Decrease £48 by 13%
 $100\% - 13\% = 87\%$
 $87\% \times £48 = £41.76$

Metric Units:
 10mm = 1cm 100cm = 1m 1km = 1000m
 100cl = 1litre = 1000ml
 1tonne = 1000kg 1000g = 1kg
 $1\text{cm}^2 = 100\text{mm}^2$
 $1\text{cm}^3 = 1000\text{cm}^3$
 $1\text{m}^2 = 10,000\text{cm}^2$
 $1\text{m}^3 = 1,000,000\text{cm}^3$
 1 litre = 1000cm³

Ratio and the Unitary Method

Billy and James have some sweets in the ratio 9:2. Billy has 35 more sweets than James. How many sweets are there altogether?

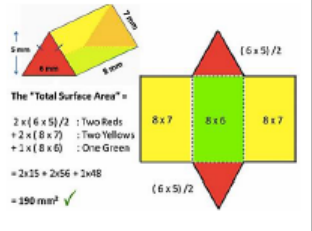
Billy has 7 more parts than James.
 $1 \text{ Part} = 35 \div 7 = 5$.
 $2 \text{ Parts} = 2 \times 5 = 10$
 Total Number of sweets = $5 + 10 = 45$

Dividing by a Decimal:
 Make the number we are dividing by an **INTEGER**

$0.246 \div 0.02$
 $\times 100 \rightarrow 24.6 \div 2 \rightarrow \times 100$
 $2 \overline{) 24.6}$
 12.3

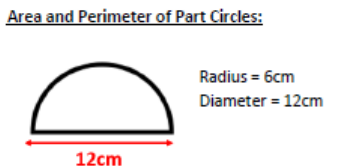
$1.738 \div 0.5$
 $\times 10 \rightarrow 17.38 \div 5 \rightarrow \times 10$
 $5 \overline{) 17.380}$
 3.476

Remember that if you divide by a number between 0 and 1 your answer will be bigger!



Arithmetic Sequences: Add or subtract the same number each time (The common difference)
 2, 11, 20, 29, ... Common difference = 9
 14, 11, 8, 5, ... Common difference = -3

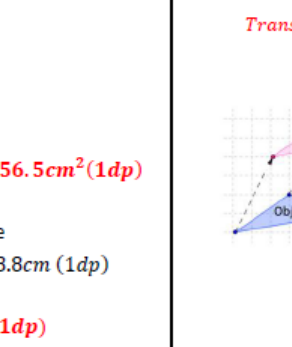
Geometric Sequence: Multiply by the same number each time (The common ratio)
 5, 10, 20, 40, ... Common Ratio = 2
 12, 6, 3, 1.5, ... Common Ratio = 0.5
 1, -3, 9, -27, ... Common Ratio = -3



Area = $\frac{\pi r^2}{2} = \frac{\pi \times 6^2}{2} = \frac{36\pi}{2} = 18\pi \text{ cm}^2 = 56.5 \text{ cm}^2 (1dp)$

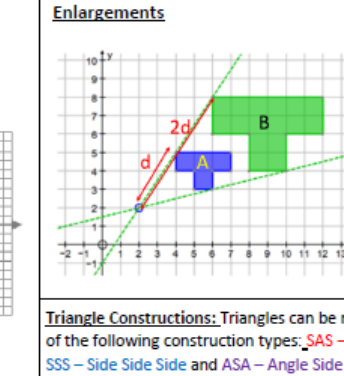
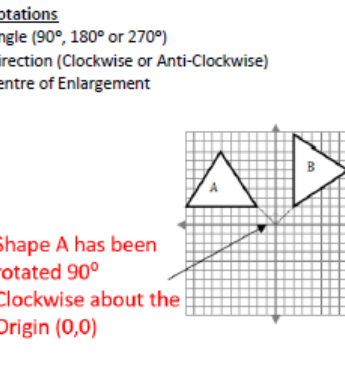
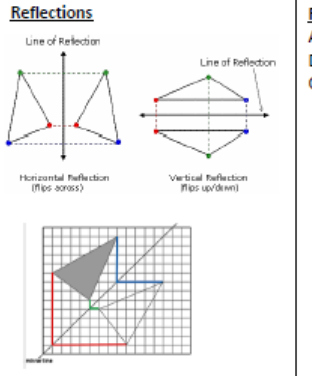
Perimeter = Curved Edge + Straight Edge
 Curved Edge = $\frac{\pi d}{2} = \frac{\pi \times 12}{2} = 6\pi \text{ cm} = 18.8 \text{ cm} (1dp)$
 Perimeter = $12 + 18.8 = 30.8 \text{ cm} (1dp)$

Translations:

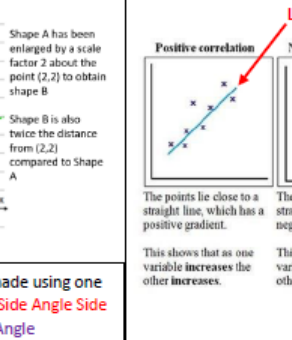


Calculating Percentage Change:
 $\text{Percentage Change} = \frac{\text{Difference}}{\text{Original}} \times 100$

A new car is valued at a price of £17000. 4 years later it is valued at £9450. The Percentage Change is:
 $\frac{17000 - 9450}{17000} \times 100 = 44.4\% (1dp)$
 The car has lost 55.6% of its original value



Scatter Graphs and Correlation



Line of Best Fit

