Year 9

Knowledge Organiser

January- April 2024

AMBITION, CONFIDENCE, CREATIVITY,
RESPECT, DETERMINATION

Proud to be part of the GREENSHAW LEARNING TRUST

FIVE ACRES HIGH SCHOOL

Why do we have knowledge organisers?
Knowledge organisers are a collation of the basic essential knowledge for success in each subject area that will underpin your learning for the term.

They are designed to provide the information you will need to be committing to your long term memory through recall exercises in Low Stakes Quizzing.

How do we use knowledge organisers?
You should be using these KOs to create your homework quizzes so that you are practising retrieving information.

1. You can do this by testing yourself on the definition of key terms (both recalling the key term and then swapping to recall the definition), practice labelling diagrams, retrieves reasons and justifications for the main learning points.
2. They can also be used for 'memory dumps' where you try to recall as much of the information about a topic as possible and then use the KP to fill in the gaps.
3. They can also be used in class to assist with retrieval of the core knowledge needed for each subject.

You should have these with you at all times in school and out on your desk in all lessons.

If you lose your KO or it becomes too dishevelled, please purchase a new one from the Head of Year or the School Office.

Contents

Year 9 English Term 2 Knowledge Organiser Dystopian Fiction - 1984

Key terminology: Definition

Adjective: Used to modify a noun or complement a verb.

Concrete noun: A noun that can be identified through one of the five senses (taste, touch, sight, hearing, or smell).

Abstract noun; A noun that cannot be perceived using one of the five senses.

Adverb: A word that describes a verb.

Imperative verb: Denoting the mood of a verb that expresses a command or exhortation, as in 'Come here!'

Verb: Word which determines an action E.g. run.

Determiner: A modifying word that determines the kind of reference a noun or noun group has, for example a, the, every

Motif: A motif is a symbolic image or idea that appears frequently in a story.

Extended metaphor: A metaphor that is developed at length, using various subjects, images, ideas and situations across a sentence or a paragraph, to encompassing an entire work.

Pathetic Fallacy: Using the weather/nature to portray a feeling/mood.

Setting: The time and place in which the story takes place. It can also include social statuses, weather, historical period, and details about immediate surroundings.

Analysis: to be able to explore alngauge or structure and explain the effects of language and other techniques.

Structure: the way a text is ordered or put together.

Evaluation: To be able to assess how much or how little something is. Evaluation of text against a statement is a useful way to deepen your understanding of a text.

Key literary techniques:

Juxtaposition: the comparing and contrasting of two or more different (usually opposite) ideas

Tension: two forces pulling in the opposite direction. Usually, the reader wants the character to do the opposite.

Narrative structure: The way a story is formed and the order of events.

Shifts: A shift in perspective while telling a story. The shift may be a change of location, narrator or time.

Tricolon: Three parallel clauses, phrases, or words.

Iscolon :Two or more sentences that share the same structure

Diacope: repeating a word or phrase with one or more words in between. EG 'To be or not to be.'

Anaphora: Repetition of words at the start of a clause or sentence.

Epistrophe: repetition at the end of a clause or a sentence.

Hypophora: When a writer raises a question and then immediately answers it.

Oxymoron: Contradicting words or phrases – 'O loving hate'.

Internal monologue: Externalising the thoughts running through a character's mind.

Imagery: building an image in the reader's mind through descriptive vocabulary

Sensory description: description which focuses on the five senses.

Key Context and Core Concepts

Socialism: A political and economic theory which advocates that the means of production, distribution, and exchange of goods should be owned or regulated by the community as a whole.

Communism: A theory or system of social organisation in which all property is owned by the community and each person contributes and receives according to their ability and needs.

Totalitarian: System of government that is centralized and dictatorial, requiring complete subservience to the state.

Propaganda: Information, especially of a biased or misleading nature, used to promote a political cause or point of view.

Misogyny: A dislike of, contempt for, or ingrained prejudice against women

Proletariat: The lowest or poorest class of people, possessing no property.

Dystopia: An imagined state or society in which there is great suffering or injustice, typically one that is totalitarian or post-apocalyptic.

Utopia: An imagined place of perfection and harmony.

Fascism: associated with dictatorship and far right politics, with a strict hierarchical, authoritarian structure where the state gets total control.

Feminism: The advocacy of women's rights on the grounds of equality of the sexes.

Marxism: An economic system in which there are no hierarchical class systems. The government controls all means of production and resources, the individual has no private ownership or wealth. In theory, all are equal.

Key events of 1984

- Winston Smith feels frustrated by the oppressive government of the Party, who watch citizens everywhere they go and have complete control over all aspects of life, including physical activity and sex.
- He starts to write in a diary, an act which is forbidden by the Party. Smith's work in the Department of Records helps the Party to change history, ensuring that BB has never been wrong.
- He worries about the constant watching of a girl from the Department of Fiction. Smith believes that the only hope for the future lies with the Proles, as they are the majority, and decides that true freedom is the freedom to think for oneself.
- Smith goes for a walk in the prole district and buys a paperweight from a junk shop, the same place where he bought his diary.
- Smith encounters girl who drops him a note that reads "I love you". He meets the girl 'Julia' in the countryside and they begin an affair
- They continue to meet in a room he has rented from Mr Charrington and thinks they will soon be caught.
- The people prepare for Hate Week, while Smith and Julia discuss the mysterious Brotherhood and the chances of rebellion.
- Smith finally has contact with O'Brien, who extends an invitation to his home, which Smith hopes will lead to joining the Brotherhood. Smith and Julia accept that they will inevitably be captured, tortured and killed, but agree that they will never betray their love

  At O'Brien's, the telescreen is turned off, and Julia and Smith are invited to join the Brotherhood.
- O'Brien sends a copy of a revolutionary book by Goldstein for Smith to read – he does so in the room above the junk shop. He and Julia are then arrested by the Thought Police, and taken away.
- Smith sits in a bare cell where the lights are always on, and there is nowhere to lie down. The room has four telescreens, which yell at him whenever he does anything.
- He shares the cell with a variety of prisoners, including his neighbour who was turned in by his own children.
- He hopes that O'Brien will offer him a chance to escape through suicide, but when he arrives O'Brien reveals that he has been working for the Party all along.
- Smith is tortured in a variety of ways - beatings and electrical shocks. O'Brien tells Smith that he resists the party because he is insane, and that pain will cure him and allow him to trust and love the Party once again. Smith slowly starts to believe the things that O'Brien tells him, and worries about what lies in Room 101. After a while, Smith is moved to a more comfortable room. He determines that he will always secretly hate the Party.
- After a dream one night, he cries out for Julia, and is taken to Room 101, where he is confronted with his worst fear - rats. He begs O'Brien to torture Julia instead, and secures his release. Later, in the Chestnut Tree Café, he hears the news of an Oceania victory with joy, and realises he loves Big Brother.

Key writing skills:

Punctuation

. to mark the end of a sentence that is a complete statement

, use in lists, in direct speech, to separate clauses, with however.

; indicating a pause, typically between two main clauses, takes the place of a co-ordinating conjunction (and, but, or, so).

: used to precede a list of items, a quotation, or an expansion or explanation.

- A versatile punctuation mark that creates a short pause. Can be used for emphasis in parenthesis (embedded clauses).

( ) used to enclose words or figures so as to separate them from the context.

... Ellipsis; inserted into a sentence to indicate a pause or silence.

' 'Inverted commas are used for quotations or can sometimes be used to create a sarcastic tone.

" " Used to show direct speech.

? Used at the end of questions

! Used to add impact. DO NOT use more than one at a time!

Sentence clauses:

- **Simple**: main clause, one piece of information. Adds drama – use when you need to add impact to what is being said.
- **Compound** : 2 or more related main clauses joined with a co-ordinating conjunction or a semi colon.
- **Complex** : 2 or more clauses, one of which is subordinate. Can be used to add detail – use to add descriptive detail and make sure you vary where you put your subordinate clauses.
- **Fragmented sentence**: can be used for effect to highlight language or an idea.
- **Embedded clause**: a subordinate clause which is inserted into a main clause to add additional information. This is also known as parenthesis.

Sentence starters to add interest:

- ✓ Double adjective
- ✓ Adverbial fronted
- ✓ Simile
- ✓ Present participle verb

Paragraph rules:

- ✓ New topic
- ✓ New person
- ✓ New place
- ✓ New time

Top writing Tips:

- ✓ Try to establish cohesion between the paragraphs.
- ✓ This will be made easier by planning first.
- ✓ Make sure that you use varied vocabulary.
- ✓ Vary your sentence structures/starters.
- ✓ Vary your punctuation.

Expanding and Factorising [M237, M792, M960, M100, M908]

To expand single brackets, multiply the term outside the brackets by each term inside.

$$b(c+d)$$

$$bc+bd$$

To factorise linear expressions fully, take out the highest common factor of all the terms.

To expand double brackets, we use a grid.

$(x - 6)(x - 4)$

	x	-6
x	x^2	$-6x$
-4	$-4x$	$+24$

$x^2 - 6x - 4x + 24$

$= x^2 - 10x + 24$

A quadratic expression can be factorised into two brackets in the form of (x+a)(x+b) where a and b can be any term, positive, negative or zero.

a and b multiply to give the constant, and add to give the coefficient of x.

Solving Equations/Changing the Subject [M707, M509, M554, M957, M184]

An equation is a statement with an equals sign, stating that two expressions are equal in value

Balancing method

$8a - 5 = 11$

$+5 \quad +5$

$8a = 16$

$\div 8 \quad \div 8$

$a = 2$

Function machine method

$10 + 6y = 34$

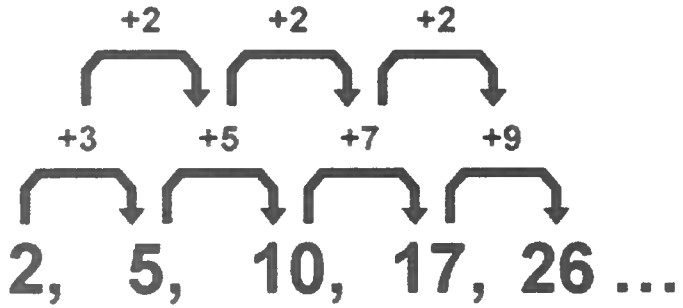
$y \rightarrow \times 6 \rightarrow +10 \rightarrow 34$

$4 \leftarrow \div 6 \leftarrow -10 \leftarrow 34$

$y = 4$

Quadratic Sequences [M418]

Quadratic sequences are sequences that include an n^2 term. They can be identified by the fact that the differences in between the terms are not equal, but the second differences between terms are equal.



Simultaneous Equations [M562, M984, M852]

<u>The elimination method</u>

One of the unknowns will be removed from each equation. The remaining unknown can then be calculated. This can be done if the coefficient of one of the letters is the same, regardless of sign.

$$3x + y = 11$$

$$2x + y = 8$$

Same Sign Means Subtract

$$2x + y = 36$$

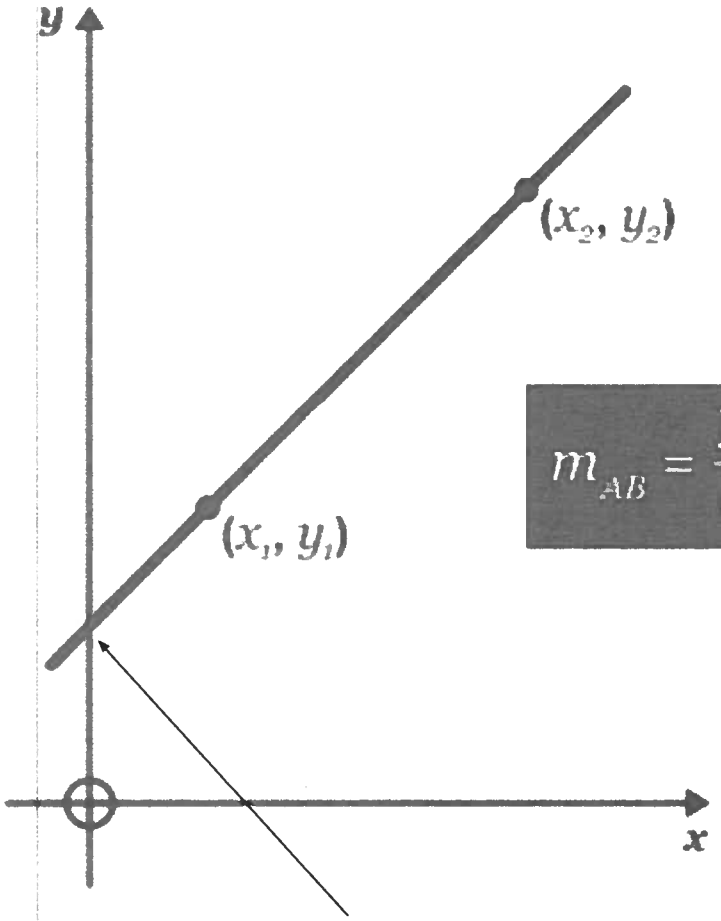
$$x - y = 9$$

Different Sign Means Add

Some pairs of simultaneous equations may not have any common coefficients.If this is the case, multiply one or both of the equations.

Equation of a Straight Line [M544, M888, M205]

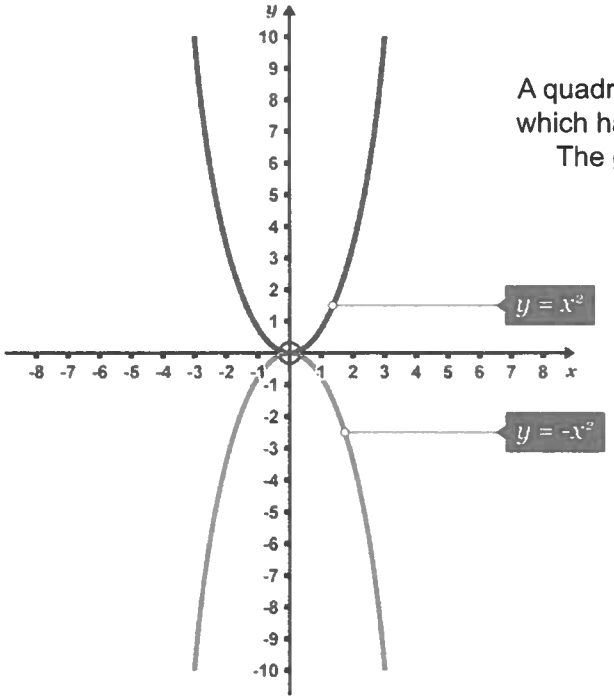
The general equation of a straight line is y=mx+c, where m is the gradient and (0,c) the coordinates of the y-intercept.



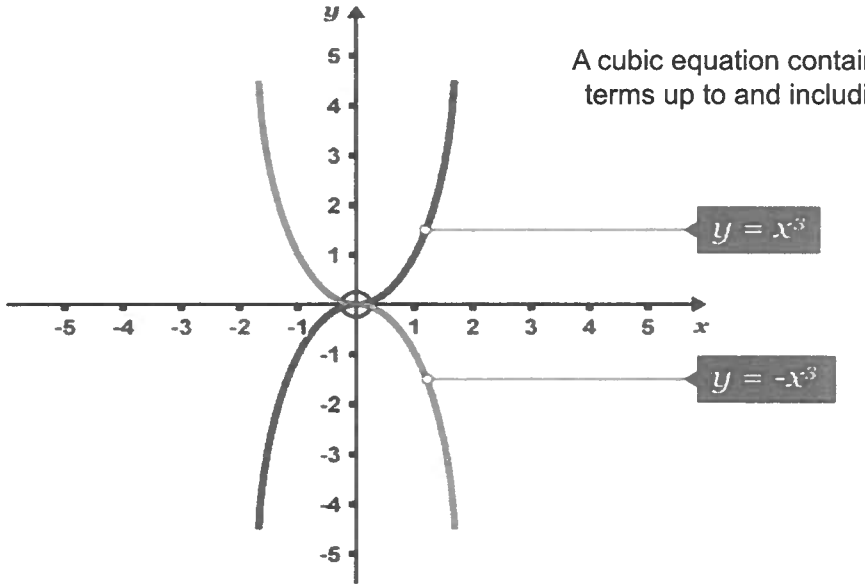
$$m_{AB} = \frac{y_2 - y_1}{x_2 - x_1}$$

Y-intercept = c

Quadratic, Cubic, Reciprocal, and Circle Graphs [U980, U667, U593, U567]

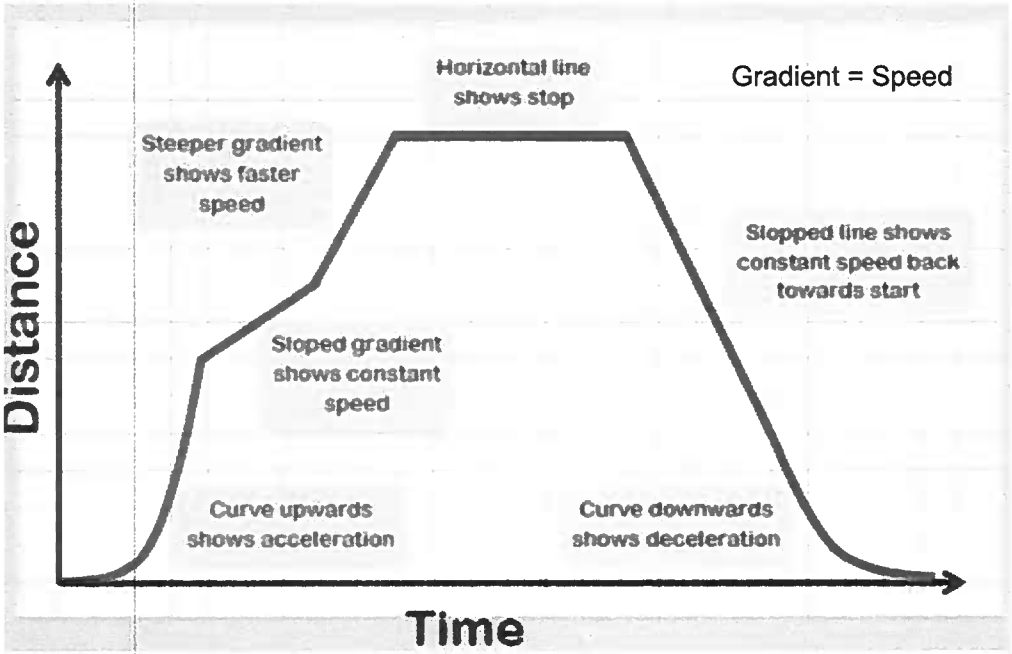


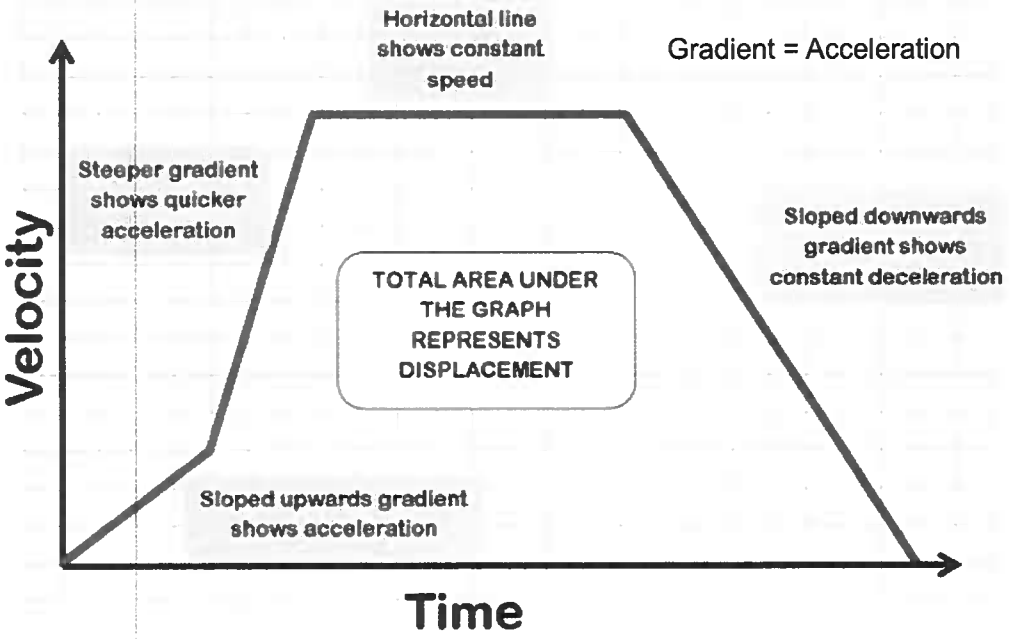
A quadratic graph is any graph which has an x^2 in its equation. The graph is a parabola.



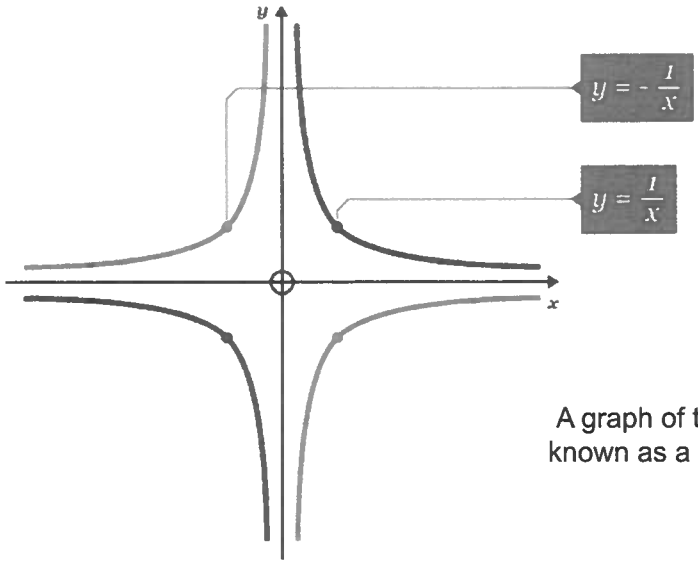
A cubic equation contains only terms up to and including x^3.

Real-Life Graphs [M843, M771, M551, M581, M247, M221]

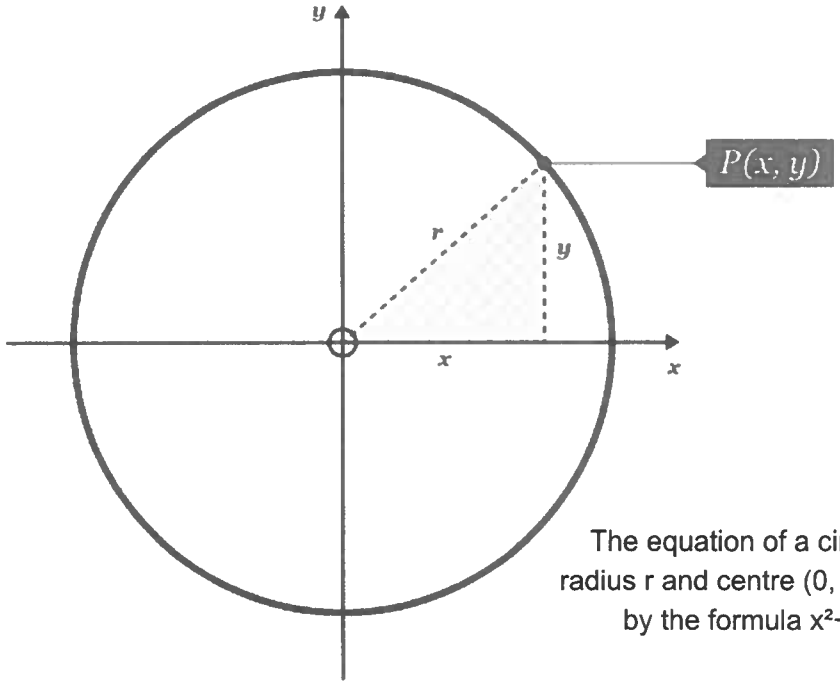




Quadratic, Cubic, Reciprocal, and Circle Graphs [U980, U667, U593, U567]



A graph of the form y=1/x is known as a reciprocal graph.



The equation of a circle with radius r and centre (0, 0) is given by the formula $x^2+y^2=r^2$

Y9 Chemistry Knowledge Organiser
Chemistry of the Atmosphere

Box 1 - The Atmosphere

For 200 million years, the amount of different gases in the atmosphere have been much the same as they are today:

- 78% nitrogen
- 21% oxygen
- The atmosphere also contains small proportions of various other gases, including carbon dioxide, water vapour and noble gases.

Box 2 - The Evolution of the Atmosphere

Scientists are not sure about the gases in the early atmosphere, as it was so long ago (4.6 billion years) and due to the lack of evidence.
Many scientists believe the early atmosphere was made up of mainly carbon dioxide, water vapour and small amounts of methane, ammonia and nitrogen, released by **volcanoes. There was little or no oxygen around at this time.**

Oceans - The early Earth was very hot, but as it cooled the water vapour in the atmosphere condensed and **formed the oceans.**

Decreasing carbon dioxide - As the oceans formed, carbon dioxide dissolved in the ocean. The carbon dioxide formed carbonates which precipitated out (formed solids). This process reduced the amount of carbon dioxide in the atmosphere.

Decreasing carbon dioxide and increasing oxygen - Approximately 2.7 billion years ago algae evolved and soon after this oxygen appeared in the atmosphere. Over the next billion years plants evolved. This decreased the amount of carbon dioxide in the atmosphere and increased the amount of oxygen in the atmosphere as they carried out photosynthesis

When sea animals evolved they used the carbon dioxide in the ocean to form their shells and bones (which are made of carbonates). When these sea creatures died their shells and bones became limestone (calcium carbonate), which is a sedimentary rock.

Once enough oxygen was in the atmosphere, it allowed animals to evolve.

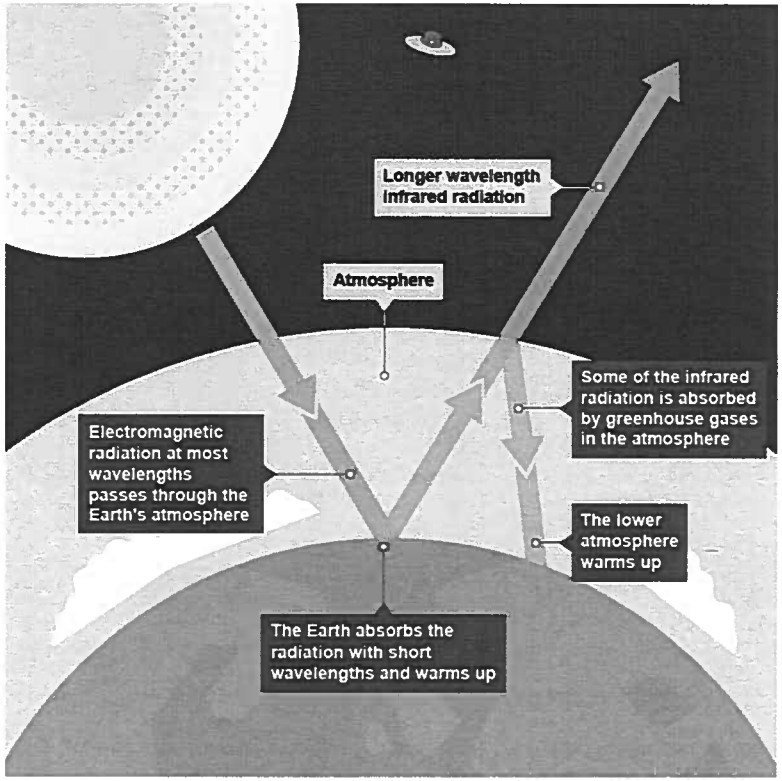
Box 3 - The Greenhouse Effect

The Earth's atmosphere contains greenhouse gases. These gases, which include carbon dioxide, methane and water vapour, maintain the temperature on Earth high enough to support life.

The greenhouse gases allow the short wave infrared radiation emitted by the Sun to pass through it but absorbs the long wave infra red radiation which is emitted by the Earth. This is how it insulates the Earth.

Some human activities increase the amounts of greenhouse gases in the atmosphere. These include:

- combustion (burning) of fossil fuels
- deforestation
- methane release from farming and destruction of peat bogs.
- more animal farming (digestion, waste decomposition)

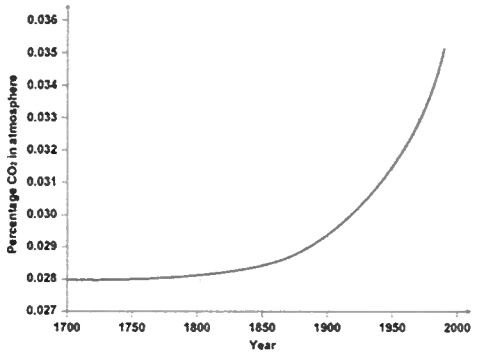


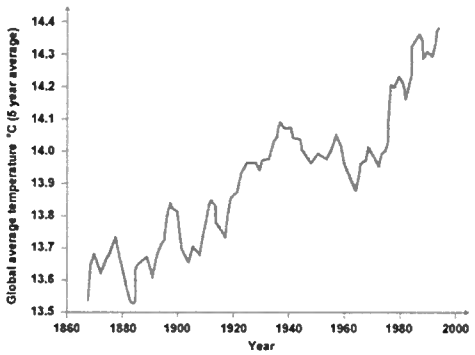
Y9 Chemistry Knowledge Organiser
Chemistry of the Atmosphere

Key Terms	Definitions
Peer reviewed evidence	This is evidence that has been scrutinised by other independent scientists to check for bias, inaccuracy and any flaws in the design of the investigations or data gathering.

Box 4 - The Enhanced Greenhouse Effect

Humans activities have enhanced the greenhouse effect through combustion of fossil fuels, increased farming and deforestation and destruction of peat bogs.
There is correlation between the increased levels of greenhouse gases in the atmosphere and the global average temperature. Based on peer reviewed evidence, many scientists believe this has lead to a **rise in global temperature.**





However, this is such a complex system and it is very difficult to model. When simplified models are presented, it can lead to **inaccurate or biased** opinions being reported in the media.

Box 5 - Consequences of Climate Change

An increase in average global temperature is a major cause of **climate change.**
The potential effects of global climate change include:

- melting of polar ice caps and sea level rise, which may cause flooding and increased coastal erosion
- more frequent and severe storms
- changes in the amount, timing and distribution of rainfall
- water shortages for humans and wildlife
- changes in the food producing capacity of some regions
- changes to the distribution and migration patterns of wildlife species.

Box 7 - Carbon Footprint

The **carbon footprint** is the total amount of carbon dioxide and other greenhouse gases released over the life of a product. Many people or businesses look to reduce their carbon footprint by:

- increased use of alternative energy supplies
- energy conservation
- carbon capture and storage
- carbon taxes and licences

People also try to **offset** their carbon by planting trees.
If something is carbon neutral, this means that there is no net increase in **carbon dioxide in the atmosphere** when it is used.

Box 8 - Other atmospheric pollutants

The combustion of fuels is a major source of atmospheric pollutants. When burning fuels, other pollutants are made. The effects of these pollutants are summarised below.

Gas	How are they made?	What is the affect?
Sulphur dioxide	Fuels contain a small amount of sulphur. This reacts with oxygen to form sulphur dioxide	Respiratory problems and acid rain
Nitrous oxides	Oxygen reacts with nitrogen in the air	Respiratory problems and acid rain
Carbon particulates	Is made during incomplete combustion	Can cause global dimming and health problems
Carbon monoxide	Is made in incomplete combustion of a fuel	Is a toxic gas. It is also colourless and odourless

Y9 Chemistry Knowledge Organiser - Chemical Analysis

Box 1 - Pure and Impure Substances

- In everyday life, a pure substance is something that has nothing added to it, so it is unadulterated – e.g. pure milk, pure honey. In terms of chemistry, these are mixtures.
- In chemistry, pure substance contains only <u>one</u> type of element or compound.
- An impure substance is a mixture.

Box 2 - Melting Point and Boiling point

- A chemically pure substance will melt or boil at a very specific temperature.
- Impurities decrease the melting point and increase the range of temperatures over which a substance will melt.
- Impurities increase the boiling point of a substance and increase the range of temperatures over which a substance will boil.

Box 3 - Formulations

- Formulations are mixtures that are designed as useful products. They are often complex mixtures with lots of different components (parts).
- Formulations are made by mixing the components in carefully measured quantities so the product has the correct properties.
- Examples of formulations include paint, fuels, cleaning agents, medicines, alloys, fertilisers, food.

Box 4 - Gas Tests

:

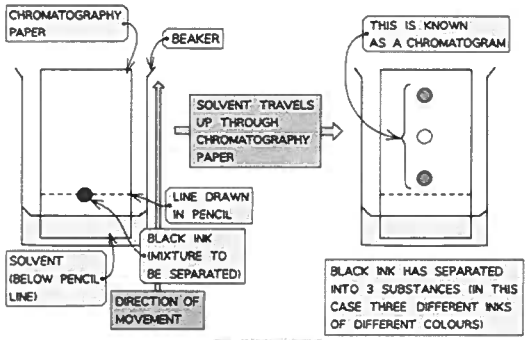
Hydrogen - Place a lit splint into the gas and there is a squeaky pop.

Oxygen – Place a glowing splint in to the gas and the splint relights.

Chlorine – Place damp litmus paper into the gas and the litmus paper bleaches.

Carbon dioxide – Bubble the gas through limewater and the limewater turns cloudy.

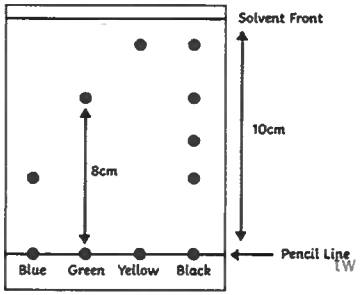
Box 5 – RP: Chromatography



Key Terms	Definitions
Pure substance (chemistry)	A substance made of a single element or compound and not mixed with any other substance.
Melting point	The temperature at which a substance melts or freezes/solidifies.
Boiling point	The temperature at which a substance boils or condenses
Formulations	Complex mixtures that are designed as useful products.
Chromatography	A technique where mixtures can be separated based on their solubility.
Stationary phase	The phase that doesn't move (i.e. the filter paper)
Mobile phase	The solvent (normally water) which moves up through the stationary phase.
Rf value	The ratio between the distance travelled by the substance and the distance travelled by the solvent.

Box 6 - Chromatography and Rf values

- Chromatography can be used to separate mixtures and can be used to identify substances.
- Chromatography involve two phases:
  - stationary phase where particles can't move (the filter paper in most cases).
  - mobile phase - the solvent (for example water) which moves up the paper.
- Separation depends on the distribution of substances between the stationary phase and the mobile phase.
- The ratio of the distance moved by the spot and the distance moved by the solvent is called the Rf value. It is always a value <1
- $Rf = \frac{Distance\ travelled\ by\ the\ substance}{Distance\ travelled\ bu\ the\ solvent}$
- Different compounds will have different R_f values in different solvents.
- A pure substance will produce a single spot in all solvents.



Rf green = 8 ÷ 10 = 0.8

Y9 Chemistry Knowledge Organiser: Using Resources

Box 1 - Water

Water of appropriate quality is **essential for life**. For humans, drinking water should have low levels of dissolved **salts and microbes.** Water that is safe to drink is called **potable water**.

The methods used to produce potable water depend on available supplies of water and local conditions.

In the United Kingdom (UK), rain provides water with low levels of dissolved substances (fresh water) that collects in the ground and in lakes and rivers, and most potable water is produced by:

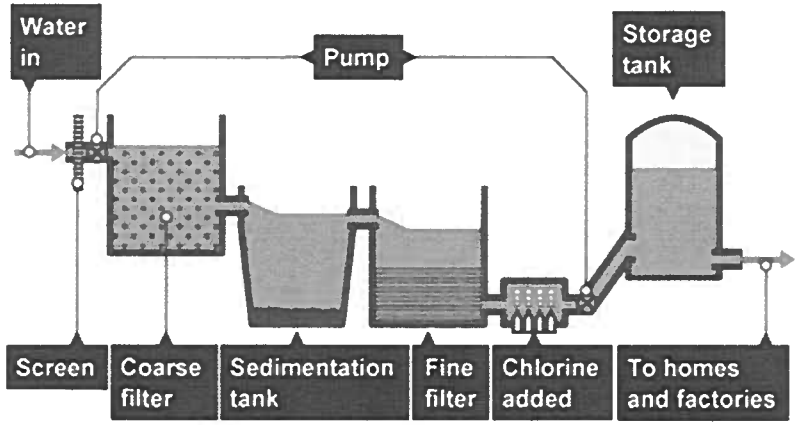
- passing the water through filter beds to remove any solids
- sterilising to kill microbes, using chlorine or UV light

In some parts of the world there is not enough fresh water so the salt has to be removed from water. This process is called **desalination.**

Desalination can be done by distillation or reverse osmosis. This requires a **large amount of energy.**

Box 2 - Waste water and Sewage

Humans are now creating a huge amount of waste water: Water from houses and farming needs to **be treated** before it can be released into rivers and lakes. It is firstly filtered to remove large particles and is then left so that the sediment drops to the bottom. The "sludge," this is the name given to the sediment at the bottom, is then anaerobically digested (broken down by bacteria) to make methane gas. Any remaining **effluent** is broken down by aerobic respiration. The water is then released back into the rivers and lakes.



Key Terms	Definitions
Potable Water	Water which is safe to drink
Phytomining	A copper extraction process using plants
Bioleaching	A copper extraction process using bacteria
Natural resources	Resources that form without human input
Renewable resources	A resource that can be made at the same or similar rate as it is being used
Finite (non-renewable) resource	A resource that isn't being replaced at a quick enough rate to be considered replaceable

Box 3 - Resources

Natural resources form without human input. They include anything that comes from the earth, sea or air. We use them to provide energy for things like heating or travelling, as well as for building materials and food. E.g. , wind is a natural resource used to generate electricity by wind turbines and metals mined from the ground can be used to make metallic objects.

Some of these natural products can be replaced by synthetic products.

e.g.

1. Rubber is extracted from the sap of a tree, but man-made polymers can replace rubber in tyres
2. Wood has been replaced by plastic in many applications e.g. laminate flooring and window frames
3. Cork is produced by trees but has been replaced in wine bottles by a synthetic plastic cork

Agriculture provides conditions where natural resources are enhanced for our needs. E.g. Development of fertilisers has enabled a high yield of crops.

Box 4 - Sustainable development

Sustainable development is an approach to development that takes account of the needs of the present society while not damaging the lives of future generations.

As finite resources run out it is unsustainable to keep using them. Extracting resources uses a great deal of energy and produces large amount of waste. Reducing the use of finite resources, recycling resources and advances in chemistry to develop more sustainable processes in agriculture and industry will preserve more finite resources.

Y9 Chemistry Knowledge Organiser: Using Resources

Box 5 - LCAs

Life cycle assessments (LCAs) are carried out to assess the environmental impact of products in each of these stages of a products life:

1. extracting and processing raw materials
2. manufacturing and packaging
3. use and operation during its lifetime
4. disposal at the end of its useful life, including transport and distribution at each stage.

Some things for example the energy required to make the product are easy to measure. However some things like how much pollution it releases are hard to measure and therefore difficult to give a value to.

Example of an LCA

	Plastic Bag	Paper Bag
Raw Material	Crude Oil	Timber
Manufacturing and Packaging	Made form crude oil by fractional distillation, then cracking and polymerisation, high energy process. Little waste as other fractions are used for other things	Made by pulping timber. Lots of waste, high energy process
Use of product	Has multiple uses, can be reused	Usually only used once
Disposal	Can be recycled but are not biodegradable	Can be recycled and are biodegradable

Key Terms	Definitions
LCA	An evaluation of the environmental impact a product had over its lifetime

Box 6 - Recycling

Many of the Earth's resources are finite: for example, metals and crude oil. It is therefore vital we recycle resources. The processes for extracting these materials are often high energy and damaging to the environment.

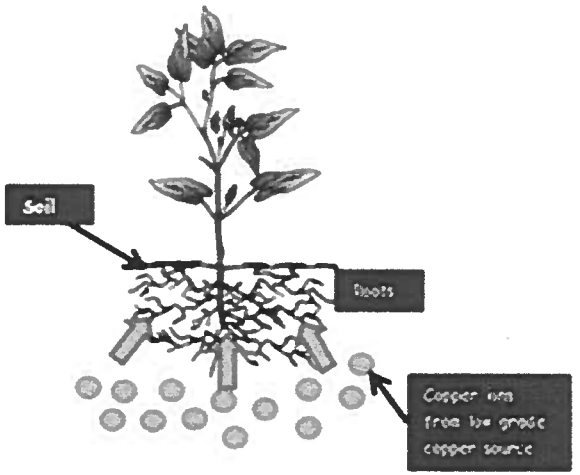
Metals can be recycled by melting and **recasting or reforming** into different products.

Some products, such as glass bottles, can be reused. Glass bottles can be **crushed and melted t**o make different glass products. Other products cannot be reused and so are recycled for a different use.

Box 7 - Higher tier: Other methods of copper extraction

There are new methods to extract copper from low grade ores. These are:

Phytomining uses plants to absorb copper from the soil, the plants are then burnt and the copper extracted from the ashes.

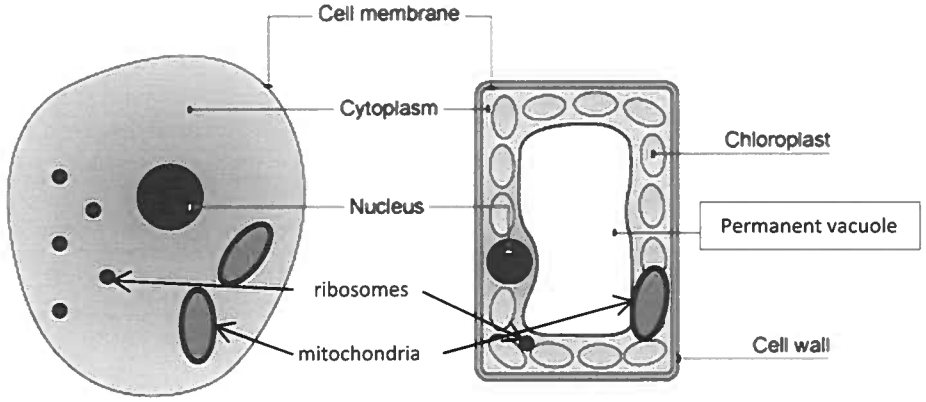


Bioleaching involves using bacteria to make a **leachate** that contains metal compounds. Scrap iron can also be used to **displace copper** from a solution. These methods do not require large scale removal of waste rock, like in other extraction processes.

Yr9 Biology Knowledge Organiser
Cell Biology

Box 1 - Eukaryotic Cells

Eukaryotic cells include all plant, animal and fungus cells.
They are eukaryotic cells because they **have a nucleus**, unlike prokaryotic cells. Learn how to identify the general cell structures (sub cellular structures) shown below.

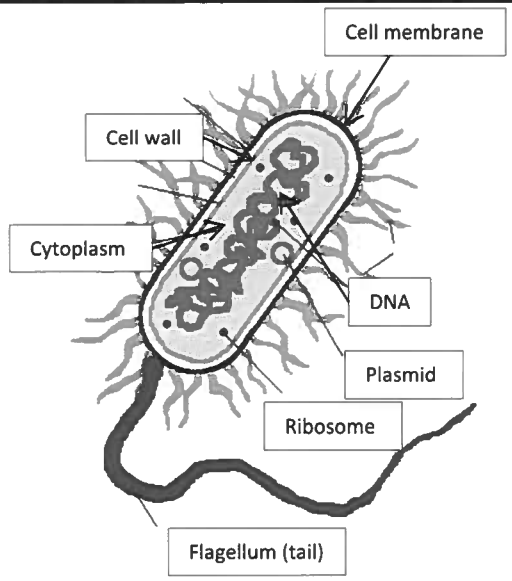


Animal cell **Plant cell**

Box 2 - Prokaryotic Cells

Bacteria are prokaryotic cells (all bacteria are single-celled organisms). The most important differences to eukaryotic cells are that they are smaller and the do not have a nucleus. (**genetic material (DNA) is not enclosed in a nucleus.**)

Prokaryotic cells have DNA in a loop, and, in addition to the main loop of DNA, they have small loops of DNA called plasmids.

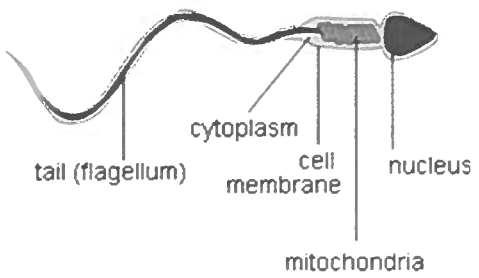


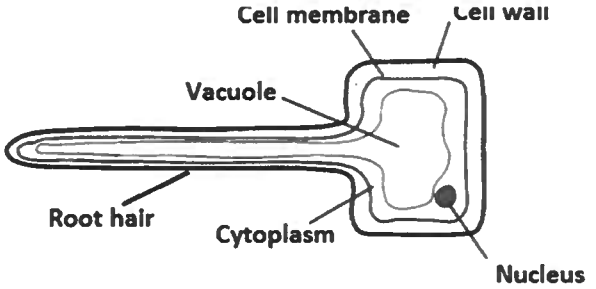
Key Terms	Definitions
cell	The basic unit of all forms of life. (All living organisms are made of a least one cell.)
eukaryotic cells	Cells with a nucleus – e.g. plant, animal and fungal cells.
prokaryotic cells	Cells that don't have a nucleus.
sub-cellular structure	A part of a cell. (Sub- means less than – so these are the component parts of cells.)
cell membrane	Controls the movement of substances into and out of the cell and is partially permeable (lets some things through but not others).
nucleus	The enclosure for genetic material found in plant and animal cells (eukaryotic cells).- controls all cell activites
cytoplasm	Where most of the chemical reactions in the cell take place.
mitochondria	Where aerobic respiration takes place.
ribosome	Site of protein synthesis (i.e. where proteins are made)
chloroplast	The site of photosynthesis – only found in plant cells and algal cells.
permanent vacuole	It is filled with cell sap (a store of nutrients for the cell). A sub-cellular structure only found in plant and algal cells –
cell wall	It is made of cellulose, it is outside the cell membrane and it strengthens the cell. Found in plant, fungal and bacterial cells
DNA	The molecule that holds the genetic information in a cell. In eukaryotic cells, it is in linear strands . In prokaryotic cells, the DNA forms a loop.
plasmid	A small loop of DNA, only found in prokaryotic cells.

Yr9 Biology Knowledge Organiser
Cell Biology

Box 3 - Multicellular Organisms

Multicellular organism are organisms made up from lots of cells. just like all animals, plants and many types of fungus. But, not all cells are the same. Cells become specialised by **differentiation**, which means they develop new features to help them perform a specific function. E.g. sperm cells and root hair cells.





Tissues - Cells with similar structures and functions working together. For example: muscle tissue in animals; phloem tissue in plants.

Organs - Multiple tissues working together to perform a function. For example: the stomach in animals; the leaf in plants.

Organ systems are formed when multiple organs work together. For example: the digestive system in animals; the vascular (transport) system in plants.

Box 4 - Microscopy

Use of a microscope is called microscopy. Microscopes allowed scientists to discover cells and find all the sub-cellular structures.
Because cells and their parts are very small, it is not useful to measure them in metres. Instead, we use small divisions of the metre as follows:

Centimetre = 1/100 metre (10^{-2} m). A centimetre is 1 one hundredth of a metre. (cm)
Millimetre = 1/1000 metre (10^{-3} m). A millimetre is 1 one thousandth of a metre. (mm)
Micrometre = 1/1 000 000 (10^{-6} m). A micrometre is 1 one millionth of a metre. (µm)
Nanometre = 1/1 000 000 000 (10^{-9} m) A nanometre is 1 one billionth of a metre. (nm)

Electron microscopes have higher magnification and higher resolution (more resolving power) than light microscopes, so they let you see smaller structures and see structures in more detail.

Key Terms	Definitions
organism	Any 'whole' living thing: can be made of one cell or be multicellular. An organism has many organ systems, all contributing to its survival.
multicellular	This describes an organism that is made of lots of cells – such as animals or plants.
specialised cell	A cell with a particular function and a shape and structure to suit its function. e.g. a sperm cell is specialised
tissue	A group of cells with similar structures and functions – i.e. a group of specialised cells.
organ	An organ is a collection (or aggregation) of different tissues working together to perform a particular function (job)
organ system	Organs don't operate alone: they work together to form organ systems.
light microscope	A usual school microscope is a light microscope. You can see large sub-cellular structures like a nucleus with it, but not a lot more detail than that.
magnification	This is the measure of how much a microscope can enlarge the object you are viewing through it.
resolution	This is the measure of the level of detail you can see with a microscope, the clarity between 2 points on an image.
electron microscope	A type of microscope with much higher magnification and resolution than a light microscope. Essential for discovering the smaller sub-cellular structures.

Equation	Meanings of terms in equation
$magnification = \frac{size\ of\ image}{size\ of\ real\ object}$	*The image Is how it looks through the microscope. The real object is what you are looking at. The image and object must be measured with the same unit, e.g. both in nm.*

Yr9 Biology Knowledge Organiser
Cell Biology

Box 5 - Stem cells

Stem cells that are **undifferentiated cells** that are able to **divide or differentiate** into specialised cells. Once cells are specialised, they can't go back to being an unspecialised cell. There are two different types of stem cells.

Embryonic stem cells – These are cells found in early embryos and these stem cells can differentiate into any kind of cell.

Adult stem cells – these are cells found in places such as bone marrow or skin. These cells can differentiate into a limited number of different types of cells. (for example bone marrow stem cells can differentiate to become all the different types of cells found in the blood).

Stem cells from bone marrow and embryos can be grown in a lab to produce clones (genetically identical cells) and then made to differentiate so they can be used in medicine or research

Using stem cells in this way is an active area of medical research, to treat conditions like diabetes and paralysis.

Therapeutic cloning is where stem cells are produced that have the same genetic information as the patient and therefore when they are used as a treatment the patient's body won't reject them.

Some people have ethical objections to stem cell research. For example they believe that every embryo is a potential life and that these cells shouldn't be used for experiments.

Plant stem cells are found in the meristems. These are parts where plant growth occurs (e.g. the tips of the shoot and roots). They can continue to differentiate into any kind of cell throughout their life into any kind of plant cell.

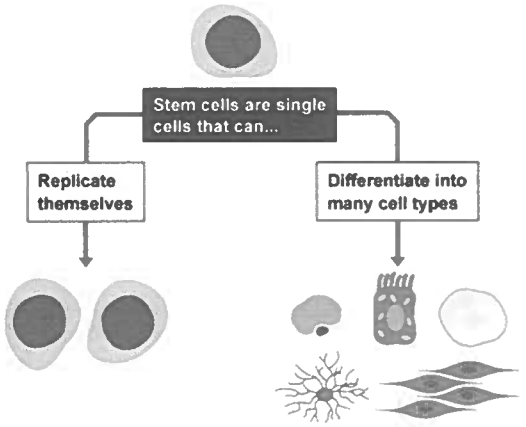
Box 6 - The cell cycle

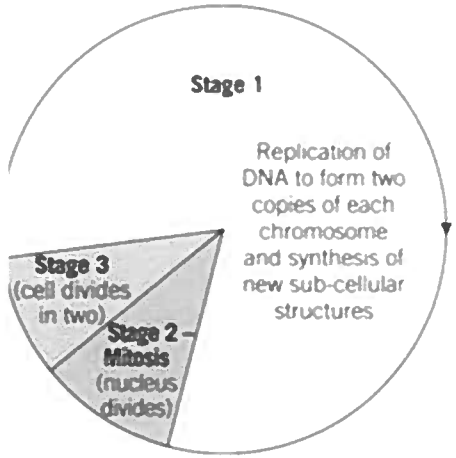
Cells divide into two to make new cells, for growth and repair, in the **cell cycle**. It isn't as simple as the cell splitting in two: it must prepare before doing that.

Stage 1 - The **cell grows** larger and **makes more sub-cellular structures**, such as ribosomes and mitochondria.. Also the genetic material (**DNA**) is replicated (copied) by making an exact replica of the chromosomes. So, there are two copies of every chromosome at this point in the cell cycle.

Stage 2 - **Mitosis** occurs: tiny fibres in the cell pull the copies of each chromosome to opposite ends of the cell, breaking the replica chromosomes apart. This means there is a full set of chromosomes at each end of the cell.

Stage 3 - The cytoplasm and cell membranes divide to form two genetically identical cells.



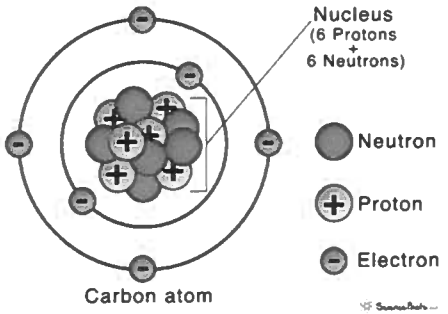


Key Terms	Definitions
differentiation	The process of becoming a specialised cell (e.g. a sperm cell or a red blood cell or a root hair cell)
stem cells	Cells that are undifferentiated. Stem cells are capable of dividing and differentiating to form specialised cells.
embryo	A very young multicellular organism, formed by fertilisation. Embryos are made of stem cells.
cell cycle	The series of stages during which cells grow and divide to make new cells.
mitosis	A type of cell division used for growth, repair and asexual reproduction. A part of the cell cycle.
chromosome	A structure made from one molecule of DNA. One chromosome contains many genes. In body cells, chromosomes are found in **pairs.**

Yr9 Chemistry Knowledge Organiser
Topic: Atomic Structure and the Periodic Table 1

Box 1 - The Structure of the Atom

- All substances are made from atoms. Atoms are very small. The radius of atom is about 0.1 nanometres ($1x10^{-10}$ m).
- The central part of the atom is known as the nucleus. The radius of the nucleus is less than 1/10,000th the radius of an atom (about $1x10^{-14}$m).
- An atom is made up of three **sub-atomic** particles: **protons, neutrons** and **electrons**.
- Protons and neutrons are found in the **nucleus.**
- Electrons are found orbiting the nucleus in **shells** (also known as *energy levels*).



The mass and charges of the sub-atomic particles :

	Mass	Charge
Proton	1	+1
Neutron	1	0
Electron	0	-1

- Atoms have **no overall charge** because they have the same number of positive protons as negative electrons.

Key Terms	Definitions
atom	All substances are made of atoms. They are the smallest part of an element that can exist.
element	Elements are substances made of a single type of atom. All atoms of a particular element have the same number of protons. Eg. Helium atoms always have two protons.
nucleus	The nucleus is the centre of an atom; it is made of protons and neutrons.
proton	Protons are sub-atomic particles found in the nucleus, they have an electric charge of +1 and a relative mass of 1.
electron	Electrons are sub-atomic particles found in the electron shells of an atom, they have an electric charge of -1 and a negligible mass.
neutron	Neutrons are sub-atomic particle found in the nucleus of an atom, they have an electric charge of 0 and a mass of 1.
nanometre	A unit of measurement: it is 1 x 10^{-9} metres. The symbol for nanometres is nm.
sub-atomic	Sub-atomic particles are particles smaller than an atom (protons, neutrons, electrons).
isotope	Isotopes are atoms of an element that have a different number of neutrons.

Box 2 - Atomic Number and Mass Number

Mass number
The total number of protons and neutrons in an atom

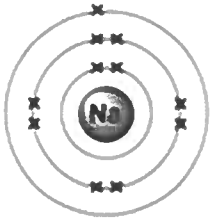
Atomic number
The number of protons in the nucleus

$^{23}_{11}Na$

Therefore sodium has 11 protons, 11 electrons and 23 – 11 = 12 neutrons
Atoms of the same element can have different numbers of neutrons. These atoms are called **isotopes**.

Box 3 - Electron Configuration/Electronic Structure

The electron configuration of an element describes how electrons are positioned in the electron shells of an atom.
The inner shell is always filled first until it is full. Each shell is filled in turn until it has the maximum number of electrons it can take.
Shell 1: maximum 2 electrons
Shell 2: maximum 8 electrons
Shell 3: maximum 8 electrons

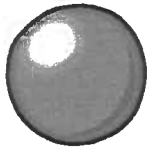
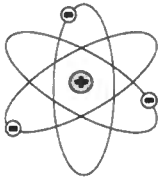
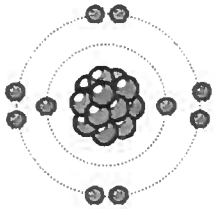


The electronic configuration of Sodium (Na) can also be written like this: 2,8,1. This shows there is 2 electrons in the 1st shell, 8 electrons in the second shell and 1 electron in the 3rd shell.

Yr9 Chemistry Knowledge Organiser Topic: Atomic Structure and the Periodic Table 1

Box 4 - The development of the atomic model

Our understanding of the structure of the atom has changed over time due to experimental evidence, deduction and technological developments. As new evidence is discovered the atomic model may change.

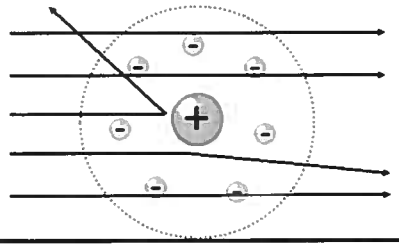
Who and when	Description of atomic model	Diagram of atomic model
John Dalton, 1803	All matter is made up of indivisible spheres called atoms. Substances made of one type of atom are elements and substance made of different types of atom chemically bonded together are compounds	
JJ Thomson, 1897	Discovery of the **electron** **Plum pudding model – positive sphere with electrons dotted through**	
Ernest Rutherford, 1909	Discovery of the nucleus **Nuclear model** - the **mass of the atom** is concentrated at the centre of the atom in the **nucleus**, which has a positive charge. Found through the **alpha particle scatter experiment.**	
Niels Bohr, 1916	Discovery that electrons orbit the nucleus in **energy levels/shells**.	
Ernest Rutherford, 1920	Discovery of the **proton**, the positive particle in the nucleus.	
James Chadwick, 1932	Discovered the **neutron** in the nucleus.	

Box 5 - The alpha particle scattering experiment

Rutherford fired alpha particles at gold leaf (very thin gold). His results showed that the mass of atoms is concentrated at the centre (in the nucleus) and that the nucleus is positively charged.

The observations and conclusions of the experiment

- Most alpha particles pass straight through - atoms are mostly empty space.
- A few deflect, but by more than expected - repelled by nucleus
- Occasionally alpha particles deflected back (completely unexpected) - the nucleus is small and positively charged.



Key Terms	Definitions
mixture	A mixture is made of two or more elements or compounds that are not chemically combined together. The chemical properties of the substances in the mixture are not changed.
compound	Compounds are made of two or more elements that are chemically bonded together in a fixed ratio.
group	Groups are the columns (down) on the periodic table.
period	Periods are the rows (across) on the periodic table.
reactant	Reactants are chemicals you start with in a chemical reaction.
product	Products are the chemicals made in a chemical reaction.

Box 6 - Elements

An **element** is a substance made from only one type of atom. All the elements that exist are shown in the periodic table and are given a symbol. E.g Oxygen – O, Iron - Fe

Box 7 - Isotopes

Isotopes are atoms of the same elements that have the same number of protons but a different number of neutrons.

Number of Neutrons = Atomic Mass – Atomic Number

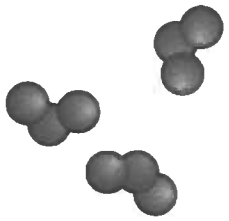
Number of Neutrons = 12 – 6 = 6	Number of Neutrons = 13 – 6 = 7	Number of Neutrons = 14 – 6 = 8
$^{12}_{6}C$	$^{13}_{6}C$	$^{14}_{6}C$
Carbon-12 98.9%	Carbon-13 1.1%	Carbon-14 <0.0001%

Yr9 Chemistry Knowledge Organiser Topic: Atomic Structure and the Periodic Table 1

Box 8 - Compounds

- Compounds are made of two or more elements that are chemically bonded together in a fixed ratio.

e.g. water – H_2O



2 Hydrogen atoms bonding with 1 oxygen atom

Box 9 - Chemical reactions

In a chemical reaction, chemical bonds in the reactants are broken, the atoms are re-arranged and new chemical bonds are made to form the products.

Either word equations or symbol questions can be used:
Word equation carbon + oxygen → carbon dioxide
Symbol equation $C + O_2 \rightarrow CO_2$

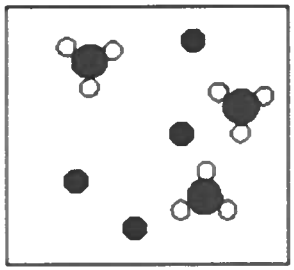
The arrow (→) in chemical reactions means "reacts to make".
In a chemical reaction, **mass is never lost**; the mass of the products always equals the mass of the reactants – this is the **conservation of mass**.

$$2Mg\ (5g) + O_2\ (3g) \rightarrow 2MgO\ (8g)$$

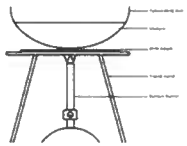
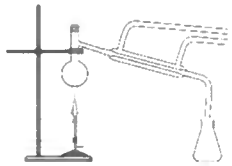
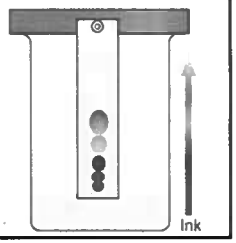
In some chemical reactions it may appear that the mass of the products is less than the mass of reactants. This is not the case and may be because a gas has been made and some has escaped.

Box 10 - Mixtures

A mixture is made of two or more elements or compounds that are not chemically combined together. The chemical properties of the substances in the mixture are not changed.
Mixtures can be separated into the elements and compounds they contain in a variety of ways. Each is a physical process; chemical bonds are not broken, so no new substances are made.
Mixtures can be thought of as **impure** substances; the purpose of separating a mixture may be to recover the elements and compounds in the mixture as **pure** substances.



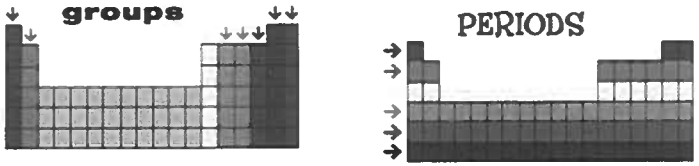
Box 11 - Separating mixtures

Method	Explanation	Diagram
Filtration	Separating an insoluble solid from a liquid. Eg. A mixture of water and sand can be separated using filter paper.	
Crystallisation	During crystallisation, a solution is heated, and the solvent evaporates leaving the solute. Eg. A solution containing water and salt will leave pure salt crystals when the water is evaporated.	
Distillation	Separate a solvent from a solution or two liquids with different boiling points. Involves evaporation and condensation. Eg. Water can be separated from a salt solution.	
Fractional distillation	Fractional distillation is when two liquids with **different boiling points** are separated because they boil at different temperatures. Eg. ethanol (alcohol) boils at 78 °C and water boils at 100 °C	
Chromatography	Substances travel at different rates through a medium depending on their solubility in the solvent used (often water, but not always). Eg. To separate and identify the dyes in food colouring.	

Yr9 Chemistry Knowledge Organiser Topic: Atomic Structure and the Periodic Table 2

Box 1 – The periodic table

- The periodic table displays **elements** in order of their **atomic number**.
- Rows in the periodic table are called **periods**. Elements in the same period have the same number of **electron shells**.



- Columns in the periodic table are called **groups**. Elements in the same group have the same number of electrons on their outer shell and similar chemical properties. As elements progress further down a group they have more electron shells.

Box 2 – The history of the periodic table

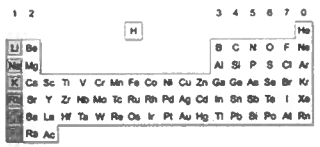
- Early versions of the periodic table elements were ordered by their **atomic weight**, so some atoms were placed in the wrong group where their properties didn't match other elements in that group.
- The first successful periodic table was created by Dimitri **Mendeleev**. He did two things differently:

1. He arranged elements by atomic weight, but changed the order (swapped) of elements so that elements with similar properties were grouped together.
2. He left **gaps** where he predicted there should be elements that were not yet discovered.

→ Elements with the properties Mendeleev predicted were later discovered and fitted in the gaps he left.

→ Mendeleev's periodic table is different to the modern one. Elements are now arranged by atomic number (the number of protons in the nucleus).

Box 3 – Group 1 – The Alkali Metals – 1 electron on outer shell



- Soft, low density and very reactive metals.
- **Melting point and boiling point decreases** as you go down the group.
- **Reactivity increases as you go down the group** because the outer electron is further from the nucleus, so there is less force of attraction on the outer electron and it is lost more easily.

Box 4 – Group 1 – The Alkali Metals continued

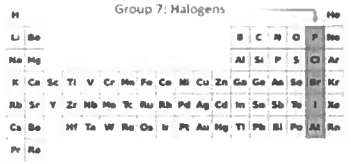
- **Chemical properties** – Form ionic compounds in reactions with non-metals and form ions with a '+1' charge.
- React vigorously with water to produce hydrogen gas.

  Sodium + Water → Sodium Hydroxide + Hydrogen
- React with chlorine to produce a chloride.

  Potassium + Chlorine → Potassium Chloride
- React with oxygen to form a metal oxide

  Lithium + oxygen → Lithium oxide

Box 5 – The Halogens – 7 electrons on the outer shell

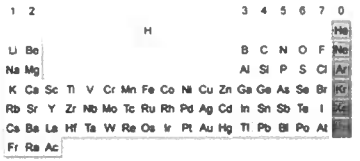


- Non-metals with **coloured vapours**.
- Diatomic - Atoms exist in pairs.

  e.g. Cl_2, Br_2.
- **Melting points and boiling points increase** as you go down the group.
- Form molecular compounds when they react with other non-metals.
- Form for ionic compounds with metals.
- **Reactivity decreases as you go down the group** as the outer electron shell gets further away from the nucleus, so there is less force of attraction and electrons are gained less easily.
- **More reactive halogens with displace less reactive halogens** from an aqueous solution of its salt.

  Sodium **bromide + chloride** → sodium **chloride + bromine**

Box 6 – Group 0 – The Noble Gases – Full outer shell of electrons



- Low melting point – all gases.
- Melting point and boiling point increase as you go down the group.
- Unreactive as they have a stable electron arrangement due to the full outer shell.

Yr9 Physics Knowledge Organiser
Energy 1

Box 1 - Energy Stores and Systems

A **system** is an object or group of objects - e.g. a kettle boiling or a roller coaster.
Energy has to be conserved (kept) in a system, so it cannot be created or destroyed. However, it can **move** from one **store** to another, in an **energy transfer**.

Box 2 - Energy Stores

Kinetic store – An energy store for any object that is moving. The amount of energy in this store can be calculated. See equation.

Thermal store - Every object has energy in a thermal store. The hotter the object is, the more energy there is in the thermal store.

Chemical potential store - The energy stored in chemical bonds - e.g. food, fuels, batteries.

Gravitational potential store– the energy stored by objects when they are raised above the ground in a gravitational field. The amount of energy in this store can be calculated. See equation.

Elastic potential store is the energy stored by an object that is stretched or compressed. e.g. a stretched rubber band

Other energy stores include the **electrostatic store, magnetic store and nuclear store**.

Box 3 - Energy Transfer

In a system, the energy can move from store to store– we can say the overall **energy in the system is redistributed.**

For example:

- Firing an object upwards transfers energy from the kinetic store of the object to the gravitational store. As it then falls the energy is transferred back to the kinetic store again.
- When boiling water in a kettle, energy is transferred to the thermal store of the water (and the surroundings)
- When a vehicle slows down, energy in the kinetic store of the vehicle is transferred to the thermal store of the brakes and the surroundings.
- When a tennis ball hits an object, energy in the kinetic store of the ball is transferred to the elastic store of the ball and to the thermal store of the ball and the surroundings.

Key Terms	Definitions
System	An object or group of objects
Energy store	A system or object can act as an energy store. Energy allows work to be done (since work done = energy transferred)
Energy transfer/ work done.	The transfer of energy from one store to another – both terms mean the same thing
Law of conservation of energy	Energy can be transferred usefully, stored or dissipated but it can never be created or destroyed
Joule	The unit for energy (J)

Box 4 - Pathways for transfers

Energy transfer occurs via the following pathways:

Mechanically – i.e. involving a force **Electrically** – via the flow of electricity

Via heating – convection, conduction **Via radiation** (e.g. light)

Equation	Meanings of terms in equation and units
$E_p = m\ g\ h$	***Gravitational potential energy = Mass x gravitational field strength x height*** *E_p = gravitational potential energy (joules, J)* *m = mass (kg)* *g = gravitational field strength (Newtons per kilogram, N/kg)* *h = height (metres, m)*
$E_k = \frac{1}{2} m\ v^2$	***Kinetic energy = ½ x mass x speed²*** *E_k = kinetic energy (joules, J)* *m = mass (kg)* *v = speed (m/s) – this is **squared** in this equation*

Box 5 - Specific Heat capacity

The amount of energy that is stored in a system or released from the system as its temperature changes can be calculated using an equation you are given on the exam equation sheet.

The specific heat capacity of a substance is the amount of energy required to raise the temperature of 1kg of the substance by 1°C.

Water has a high specific heat capacity compared to copper, so it takes lots of energy to raise its temperature. This explains why copper will heat up more easily than water.

Yr9 Physics Knowledge Organiser
Energy 1

Box 6 - Power

Power is the **rate (speed) of energy transfer** . It is measured in **Watts** . 1 Watt (W) = 1 joule per second (J/s)

Power can be calculated – the top two equations show how you calculate power.

We can compare two electric motors that each lift up an object of the same mass to the same height. This means they both transfer the same amount of energy to the object. If one motor does this quicker than the other, it means that it has a higher power because it transferred the energy more quickly.

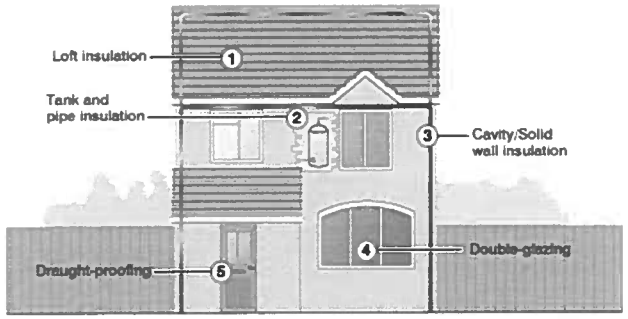
Box 7 - Unwanted Energy Transfers

During any energy transfer, energy can be transferred usefully, meaning that the stored energy is transferred in a way that does useful work. However, whenever energy is transferred, some **of the energy is dissipated.** This means it stored in less useful ways. We often call the dissipated energy **'wasted energy'.**

Unwanted energy transfers can be reduced by:

- **oiling/lubricating moving parts** (reducing friction, and therefore the transfer to thermal stores) or insulating systems.
- Using **thermal insulation.**

Thermal insulation is insulation that reduces transfer of energy to the thermal store of the surroundings. (e.g. loft insulation or cavity wall insulation)
The higher the **thermal conductivity** of a material, the higher the rate of energy transfer by conduction across it.
Metals have high thermal conductivity.
Materials used for thermal insulation (e.g. loft insulation) have a low thermal conductivity.



Key Terms	Definitions
Power	Power is the **rate** of energy transfer – also known as the rate at which work is done. (Remember, energy transferred is the same as work done.)
Watt (W)	The watt is the unit for power. One watt is one joule transferred in one second – or 1 J/s (1 joule per second).
Dissipated energy	Simply, this means 'spread out'. This means that during energy transfers, some energy is stored in less useful ways. This can be called 'wasted' energy.
Efficiency	The measure of the proportion of the energy in a system that is transferred usefully. More efficient devices transfer more energy usefully. (they waste less energy.)

Box 8 - Efficiency of Energy Transfers

Efficiency measures the proportion of energy in a system that is usefully transferred. It can be calculated (see equations) and given as a decimal or a percentage.
Since there is **always** some wasted energy, efficiency must **always be less than 1 (if expressed as a decimal), or less than 100%.**
To improve efficiency, we reduce the unwanted energy transfers (i.e. reduce the wasted energy).

Equation	Meanings of terms in equation and units
$P = \frac{E}{t}$ Power = $\frac{\text{Energy transferred}}{\text{time}}$	*P = power (watts, W)* *E = energy transferred (joules, J)* *t = time (s)*
$P = \frac{W}{t}$ Power = $\frac{\text{Work done}}{\text{time}}$	*P = power (watts, W)* *W = work done (J)* *t = time (s)*
$efficiency = \frac{useful\ output\ energy\ transfer}{total\ input\ energy\ transfer}$	*Efficiency doesn't have a unit. You can convert the efficiency (which will be a decimal) to a percentage by multiplying by 100.*
$efficiency = \frac{useful\ power\ output}{total\ power\ input}$	

Year 9 Physics Knowledge Organiser – Energy 2

Box 1 - Energy Resources

Energy resources are used for generating electricity, heating and transport. Demand for energy is increasing.

Renewable energy resources are ones that are being (or can be) replenished (replaced) as they are used.

Non-renewable energy resources are being used at a faster rate than they can be replenished.

The resources we use need to change over time. There needs to be less reliance on fossil fuels and we need to use more renewable resources. Factors such as reliability and cost mean this is not always easy.

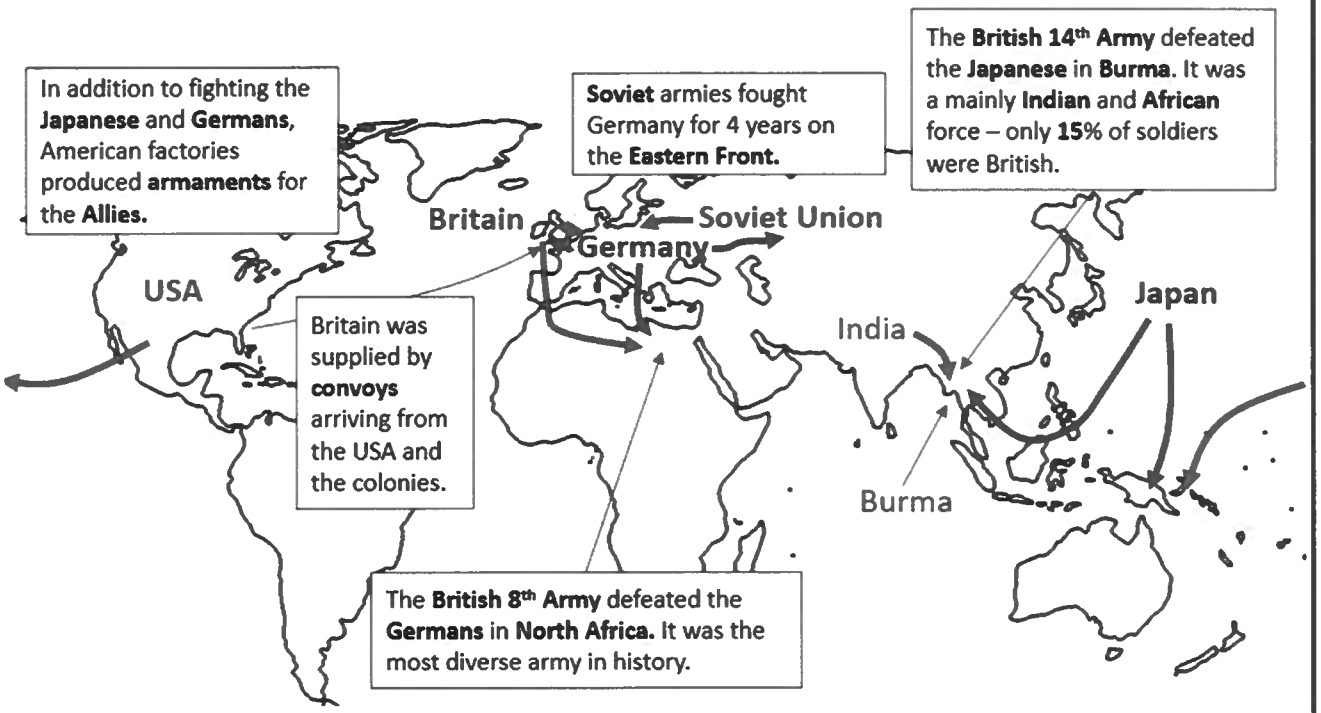
Energy resource	*How it works to generate electricity*	Uses	Positive	Negative
Fossil Fuels (coal, oil and natural gas)	Burnt to release thermal energy used to turn water into steam to turn turbines	Generate electricity, heating and transport	Cheap to extract and reliable	Non-renewable. Burning fossil fuels releases carbon dioxide which contributes to global warming. Burning coal and oil releases sulfur dioxide, which contributes to acid rain.
Nuclear	Nuclear fission process releases thermal energy, then as above (water>steam>turbine>electricity)	Generate electricity	No greenhouse gases produced. Lots of energy transferred from small amounts of fuel. Reliable	Non-renewable. Dangers of radioactive materials being released. Start up costs, running costs and decommission costs very expensive. Toxic waste difficult to dispose of.
Biofuel	Plant matter burnt to release thermal energy, then as above (water>steam>turbine>electricity)	Transport and generate electricity	Renewable. They are 'carbon neutral'.	Large areas of land needed to grow fuel crops. Habitats destroyed and food not grown.
Tides	Every day tides rise and fall, so water turns turbine as it moves through a barrage.	Generate electricity	Renewable. Predictable due to consistency of tides. No greenhouse gases produced.	Expensive to set up. A dam like structure is built across an estuary, altering habitats.
Waves	Up and down motion turns turbines	Generate electricity	Renewable. No waste products.	Can be unreliable and not currently large scale
Hydroelectric	Falling water spins a turbine	Generate electricity	Renewable. No waste products. Reliable	Habitats destroyed when dam is built.
Wind	Movement causes turbine to spin which turns a generator	Generate electricity	Renewable. No waste products.	Unreliable – wind speed varies. Visual and noise pollution.
Solar	Sunlight absorbed by photovoltaic cells creates electricity or directly heats liquid in solar panels	Generate electricity and sometimes heating	Renewable. No waste products.	Making and installing solar panels expensive. Unreliable in the UK
Geothermal	Hot rocks under the ground heats water to produce steam to turn turbine	Generate electricity and heating	Renewable. Clean. No greenhouse gases produced.	Limited to a small number of countries. Geothermal power stations can cause earthquake tremors.

History: Knowledge Organiser Year 9 : How did the Second World War change Britain?

1 Key Vocabulary

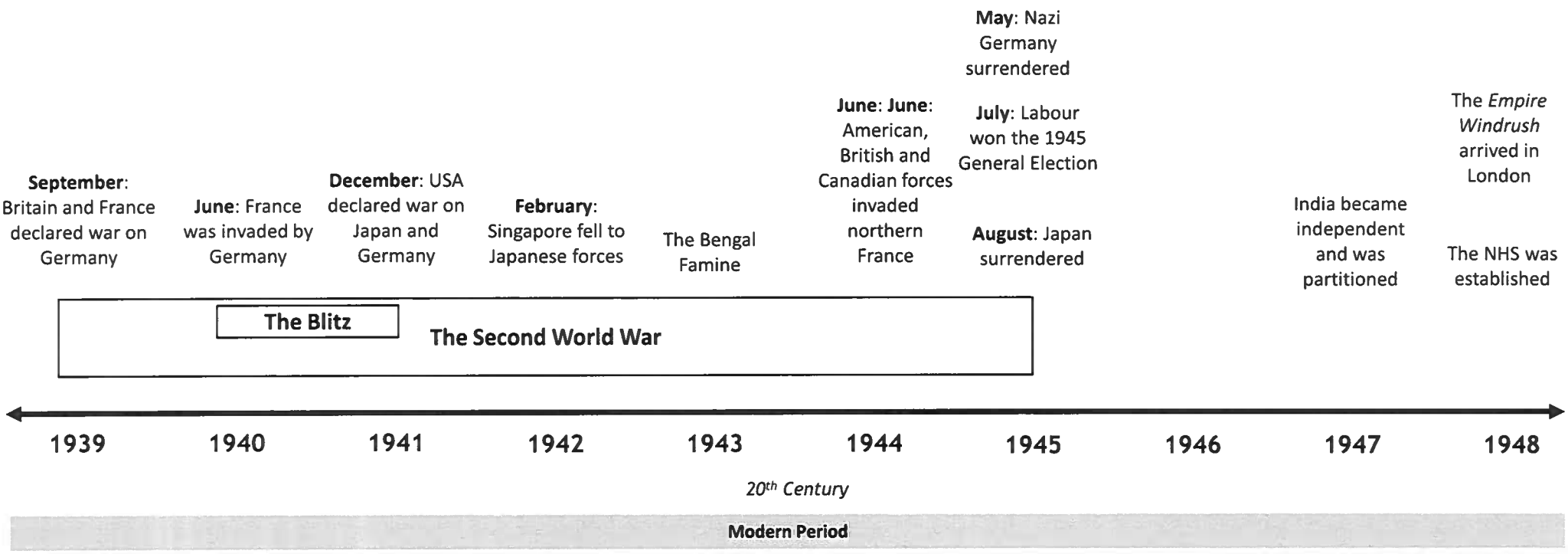
The Blitz	the German bombing of Britain in 1940-1
To conscript	to force someone to join the army
Eastern Front	the frontline between Germany and Russia
General Election	an election to decide the national government
To establish	To set up
bankrupt	out of money
immigration	people moving into a country
Windrush	ship that brought Jamaican migrants to the UK
shortage	a lack of
refugee	someone fleeing war or disaster
Partition	the separation of India into India, Pakistan, and Bangladesh

2 The British Empire and the Second World War



History: Knowledge Organiser Year 9: How did the Second World War change Britain?

3 Timeline



History: Knowledge Organiser Year 9: How did the Second World War change Britain?

4 Resisting invasion (1939-1941)

In 1940 and 1941, Britain fought off German invasion

After the fall of France, Hitler prepared to invade Britain

- **Germany** invaded **France** in 1940
- **German** aeroplanes bombed British cities in the **Blitz**
- British colonies such as **Burma** were invaded by **Japan**

The experience of the Home Front changed the lives of people across Britain

- Women were **conscripted** into war work such as working in **munitions** factories and on farms
- The government took action to protect the British people such as:
    - **evacuating** children to the countryside
    - enforcing a **black out**
    - introducing **rationing** to prevent shortages

Britain was never 'alone'

- Britain was supplied by **convoys** – groups of supply ships - arriving from the **USA** and the **colonies**
- Pilots from **Poland**, **Canada**, **Australia**, and **Jamaica** helped protect Britain in 1940-1
- The **USA** provided huge loans to Britain
- In 1941, both the **USA** and the **Soviet Union** joined the war as Britain's **allies**

5 Winning the war (1941-1945)

The British Empire worked with its allies to win the war

Britain didn't fight the Second World War, the British Empire did

- The **British 8th Army** which defeated the **Germans** in **North Africa** was the most diverse army in history with soldiers from across the Empire
- The **British 14th Army** which defeated the **Japanese** in **Burma** was a mainly **Indian** and **African** force – only **15%** of soldiers were British

The USA and the Soviet Union led the Allies to victory

- **Soviet** armies fought the Germans for 4 years on the **Eastern Front**
- In addition to fighting the **Japanese** and **Germans**, American factories produced **armaments** for the **Allies**

The war weakened the ties between Britain and its colonies

- The fall of **Singapore** in 1942 convinced **colonies** like **Australia** that Empire could no longer to protect them
- The **Bengal Famine** in 1943 killed three million Indians
- **African** and **Indian** soldiers who fought for Britain were paid less than British soldiers

6 Labour and the Welfare State

The Labour Party won a landslide victory in the 1945 General Election

Labour won the 1945 General Election

- The new prime minister, **Clement Attlee**, promised to continue using the power of the government to '**win the peace**'
- Labour won because British people felt the government should reward them for their **sacrifices**

Labour expanded the welfare state

- The government introduced welfare services to look after citizens '**from the cradle to the grave**'
- This included free education until the age of 15, increased sick pay, and **pensions** for the elderly
- The **National Health Service** was **established** in 1948
    - The **NHS** provided free healthcare including access to doctors, dentists, opticians and hospitals
    - The **NHS** was paid for by **taxes**

History: Knowledge Organiser Year 9: How did the Second World War change Britain?

7 Indian Independence

In 1947, India finally gained independence from the British Empire. **Several factors led to this:**

1. The failure of British rule

- In 1942, the Japanese captured the British base at **Singapore**, convincing **Indians** that Britain could no longer protect them
- 3 million died in the 1943 **Bengal Famine**

2. Gandhi and Quit India

- Indians expected that their wartime sacrifice would
- During the war, **Mahatma Gandhi** was arrested
- The **Quit India** protests aimed to make it impossible for British rule to continue

3. British economic problems

- After the war, Britain was **bankrupt** and heavily in debt to the **United States**
- Britain could not afford to carry on ruling India

4. Pressure from the United States

- The **USA** opposed the British Empire and had forced Britain to sign the **Atlantic Charter** in 1941 which defended "the right of peoples to choose their government"
- Britain's **debt** meant they could not afford to disobey the USA

Independence was followed swiftly by the violence of Partition

- Violence broke between **Hindus** and **Muslims** over who would rule independent India
- In 1947, Britain announced that its former **colony** would be divided into three: **India** for **Hindus** and **Pakistan** and **Bangladesh** for **Muslims**
- **Partition** and religious violence led to millions becoming refugees and over a million deaths

8 Migration

In the decades after the Second World War, immigration from the colonies to Britain accelerated:

Empire Windrush

- In 1948, the ***Windrush*** arrived in London carrying 492 **Jamaicans** hoping to make a new life in Britain. This arrival of the *Windrush* marked the beginning of large scale **immigration** from the Empire to Britain.

Causes of migration to the UK after 1945:

- A shortage of workers led the British government to recruit migrants from the Caribbean
- Many migrants had served in the British army during the Second World War
- Economic problems in colonies such as Jamaica led to high unemployment and young people migrated to Britain to find work
- Later groups of migrants came to Britain as refugees escaping civil wars in their countries

History: Knowledge Organiser Year 9 : Was Lien's story typical of European Jews in the 20th Century?

1. Jewish life in Europe before the Second World War

Lien's childhood was typical of Western European Jews, but very different from the lives of Jews in Eastern Europe

Lien's childhood

- Lien grew up in the 1930s in the **Netherlands**
- Lien went to school with all sorts of children and spoke **Dutch** with her friends
- Lien's family were **Jewish**, although Lien did not think of herself as Jewish
    - She did not go to the **synagogue**
    - She did not wear religious clothes
    - Most of her friends and neighbours were not Jewish

In Western Europe, the Jewish population was small and assimilated

- Just 130,000 Jews lived in the **Netherlands**
- Jewish children went to school with Christian children and spoke the same language
- Some **Western European** Jews were well-educated and wealthy

In Eastern Europe, the Jewish population was large and segregated

- Around 3 million Jews lived in **Poland**
- **Eastern European** Jews lived in separate Jewish villages called **shtetls**
- Most Jews spoke a separate language called **Yiddish**, wore traditional religious clothes, and sent their children to Jewish schools
- Jewish communities were threatened by anti-Semitic attacks called **pogroms**

2. Life under Nazi occupation

The 1940 Nazi occupation of the Netherlands changed Lien's life forever

Lien's life under Nazi occupation

- Lien was forced to attend a school for Jewish children
- The **Nazis** prevented Jews from using libraries, museums, parks, or swimming pools
- Jews were forced to make and wear a large **star of David** on their clothing
- Lien was attacked by Dutch children whilst she was playing in the street. Her Father rescued her but was called

After Hitler was appointed Chancellor of Germany in 1933 he immediately began persecuting Germany's Jews, motivated by deep anti-Semitism:

In Germany, Nazi rule during the 1930s brought anti-Semitic laws and violence

- The **Nuremburg Laws** removed the **civil rights** of German Jews, including the right to vote and the right to marry non-Jewish Germans
- On **Kristallnacht**, **synagogues** were destroyed and Jewish men were killed and taken to concentration camps

In Poland, the Nazis set up ghettoes

- The Nazis **occupied** Poland in 1939
- The Nazis forced the Jewish population to move into **ghettoes,** segregated areas of cities where Jews could be controlled

History: Knowledge Organiser Year 9: Was Lien's story typical of European Jews in the 20th Century?

3. The Holocaust

During the Second World War continued, the Nazis attempted to exterminate the Jewish population of Europe

Lien and the Holocaust

- In 1942, Dutch Jews began to be sent to **death camps**
- Lien's parents gave her to a woman called **Mrs Heroma** who helped Lien hide with different families in the **Netherlands**
- Lien's parents were arrested and sent to **Auschwitz** where they were murdered
- **80%** of Dutch Jews were murdered, including almost all of Lien's extended family

***During* the Holocaust, the Nazis murdered over 6 million Jews**

- As the German army advanced eastwards, mobile killing squads – the **Einsatzgruppen** – killed entire **shtetls**
- After 1942, the Nazis set up **death camps** across Eastern Europe. This was known as the **Final Solution**.
    - Jews were moved from **ghettoes** to **death camps**
    - **Death camps** were designed to kill large numbers of people
    - At the largest camp, **Auschwitz**, 1.1 million people were murdered

4. Collaboration and Resistance

The people of Europe responded to the persecution of Jews in different ways

Lien in hiding

- **Mr** and **Mrs Heroma** organised the hiding of hundreds of Jews in the **Netherlands**, including Lien
- Lien stayed with was the **Van Es** family for a year before staying with several other families
- Dutch policemen such as **Harry Evers** arrested Jews, including Lien's parents

Many people across Europe collaborated with the Nazis

- Many people in Europe were **anti-Semitic** like the Nazis
- Organisations such as **La Milice** in France and the **Blue Police** in Poland helped the Nazis murder Jews

Others resisted by helping Jews escape

- In **Denmark**, the population helped smuggle **Danish** Jews to safety in **Sweden**
- **99%** of **Danish** Jews survived the **Holocaust**

Jews also resisted the Holocaust themselves

- During the **Warsaw Ghetto Uprising**, Polish Jews fought back against the Nazis
- Some Jews who managed to escape the Nazis became **partisans**: fighting units living in the forests and attacking Nazi soldiers

5. Consequences

Lien survived the war but, like many others, the Holocaust shaped the rest of her life

Lien's life after the Second World War

- After the war, Lien returned to live with the **Van Es** family
- She trained as a nursery teacher
- Lien married her husband, Albert, in 1959 and had three children
- However, Lien felt guilty that she had survived and attempted suicide
- Her cousin Ben, one of her only surviving family members, succeeded in killing himself

The consequences of the Holocaust

- Over **6 million** Jews were murdered, including **90%** of Jewish children in Europe
- The **shtetls** of **Eastern Europe** were completely destroyed
- Survivors experienced the end of the war as a moment of **grief**
- Some felt a sense of **survivor's guilt** that they, but not their families, had survived
- Many survivors **migrated** away from Europe to start new lives in **Britain**, the **USA**, and **Israel**

Year 9 – What happens where the land meets the sea? (Coasts)

KPI1: Key words

1. **Coastline**: The area of land where the sea meets the shore.
2. **Erosion**: The wearing down or breaking down of materials like rocks
3. **Geomorphology**: The study of how the **coastline** changes.
4. **Weathering**: The process that changes the structure and appearance of materials like cliffs, by how they are exposed to the atmosphere.
5. **Geology**: The study of rocks
6. **Glacial Till:** Soft material dumped in an area by glaciers.
7. **Subaerial erosion:** The **weathering** and movement of the top of a cliff
8. **Hydraulic Action**: the power of the wave forces water and air into cracks in the rock to split it apart. Over time this creates faults and notches which get bigger.
9. **Abrasion**: The waves pick up rocks from the sea and throws them against other rocks or the cliff faces. Over time this rubs and smooths the rock, like using sandpaper.
10. **Solution**: Salts or chemicals in the water act to dissolve the rocks they touch.
11. **Attrition**: The sea picks up angular rocks and knocks them into each other. This chips away the corners to make them rounder.
12. **Traction** - large, heavy pebbles are rolled along the seabed.
13. **Saltation** - pebbles are bounced along the seabed.
14. **Suspension** - lighter sediment is suspended *(carried)* within the water.
15. **Solution** - the transport of dissolved chemicals.
16. **Longshore drift:** The movement of material down the coastline in the direction of the **prevailing wind**.
17. **Prevailing wind**: Strongest wind
18. **Swash**: Waves that move up the beach.
19. **Backwash**: Waves that move down the beach
20. **Constructive waves**: More gentle waves that deposit *(drop)* more material.
21. **Destructive waves**: More violent waves that erode material.
22. **Faults**: a crack or fracture in the rock.
23. **Lithosphere** - The lithosphere is the solid, outer part of Earth. The lithosphere includes the brittle *(easily broken)* upper portion of the mantle and the crust, the outermost layers of Earth's structure.

KPI2 – Geology and Weathering

Types of geology (rocks):

Igneous rocks:

- Formed from molten rock *(rock which has been heated to a high temperature)*
- The molten rock cools slowly allowing minerals to form large crystals which lock together
- Very hard and durable *(can withstand pressure)*
- Examples: Granite and basalt. Used to construct some buildings, surface roads etc.

Sedimentary rocks:

- Formed under the sea under pressure when rock particles were squeezed and cemented together to form rock.
- Examples: Chalk, limestone, clay. Used to make concrete and clay is used to make house bricks.

Metamorphic rocks:

- Form from existing rocks that are transformed by heat or pressure – existing minerals melt and form new minerals.
- Mudstone (sedimentary) is transformed into slate. Limestone into marble.
- Examples: Marble, slate. Used for Slate can be used for roof tiles, marble is a building stone that is used to make statues.

Weathering:

1. Freeze-thaw weathering: the disintegration (break-up) of rocks by physical forces. Water freezes in **faults** in the rocks and expands *(get bigger)*, widening cracks overtime.
2. Chemical weathering: occurs when rainwater, which is slightly acidic comes into contact with rock. The acid attacks the rock, causing it to rot and accumulate *(build up)*.
3. Biological weathering: occurs when plants and animals break down rock. The roots or vegetation can get into cracks in the rock, causing them to split

KPI3: Erosion and Transportation

Processes of Erosion:

- **Hydraulic Action**: the power of the wave forces water and air into cracks in the rock to split it apart. Over time this creates **faults** and notches which get bigger.
- **Abrasion**: The waves pick up rocks from the sea and throws them against other rocks or the cliff faces. Over time this rubs and smooths the rock, like using sandpaper.
- **Solution**: Salts or chemicals in the water act to dissolve the rocks they touch
- **Attrition**: The sea picks up angular rocks and knocks them into each other. This chips away the corners to make them rounder

Processes of Transportation

- **Traction** - large, heavy pebbles are rolled along the seabed.
- **Saltation** - pebbles are bounced along the sea bed.
- **Suspension** - lighter sediment is suspended *(carried)* within the water.
- **Solution** - the transport of dissolved chemicals.

KPI4: Landforms created by processes of erosion.

Cave, arches, stacks and stumps.

1. A **fault** opens in the rocks
2. Due to **hydraulic action** the fault becomes bigger to form a notch
3. **Abrasion** and **hydraulic action** widen the notch into a cave that keeps getting bigger
4. Due to waves and **erosion**, the cave opens through and forms an arch
5. The arch keeps widening and the roof becomes too heavy and collapses.
6. This leads to a stack standing but still being undercut.
7. The stack will eventually collapse, leaving a stump.

Wave cut platforms

1. **Erosion** at the base *(bottom)* of the cliff at high tide creates a notch
2. Over time the notch is enlarged by attrition and hydraulic action
3. The notch makes the cliff unstable and gravity causes it to collapse over time.
4. The process retreats and the cliff retreats *(moves back)* inland.

Year 9 – What happens where the land meets the sea? (Coasts)

KPI5: Processes of transportation

Constructive and Destructive waves:

Formation of waves:

1. Waves are caused by the movement of the wind.
2. As wind blows over the surface of the sea, it creates friction *(resistance)* on the surface which pushes the water along to build up a wave.
3. Water within a wave moves in circular patterns getting bigger as the waves gets taller and then when the wave meets the shore, it becomes unstable and is forced to break.

Constructive waves lead to gently sloping beaches.

Destructive waves lead to steep beaches.

Longshore drift:

1. Waves approach at an angle due to the direction of the **prevailing wind.**
2. The **prevailing wind** pushes a wave up the beach, picking up beach material in the **swash**
3. Another wave then picks up beach material and moves it down the beach. This is the **backwash**.
4. The whole process keeps on repeating, moving the material back up and down the beach over and over until it meets a barrier.

KPI7: How does deposition change the coastline?

Deposition: When waves no longer have the energy to carry the material that has been eroded and transported along the coastline, it is deposited *(put down)*.

KPI8: How has life on the Holderness Coast changed?

It is the fastest eroding coastline in Europe. It is estimated that 32 villages since the Roman times have been lost.

Erosion is occurring because...

- Rock type
- **Prevailing wind** direction
- Winter storms

Impacts:

- In Skipsea, more than 200 homes are predicted to be lost in the next 100 years.
- More than 600 people are expected to be moved within the next 5 years.
- Spurn Point a conservation site is under threat from erosion.
- A gas terminal that provides 25% of Britain's gas supply is 25m from the cliff edge.

KPI9: What defences can be used to protect the coast?

- Hard engineering: Involves more expensive and dramatic physical structures and changes.
- Soft engineering: Involves trying to work more closely with nature and usually cheaper.

Types of hard engineering

Type	+ives	-ives
Groynes	Reduces longshore drift	Wood groynes have a short life span
Sea Wall	Protect the land behind	Unattractive and expensive option
Rock Armour	Often considered natural looking	Can be expensive if large scale
Gabions	Absorb wave energy against cliffs	Considered unattractive

Types of soft engineering

Type	+ives	-ives
Beach replenishment	Maintains the size of the beach to absorb wave energy	Has to be frequently replaced due to storms
Managed retreat	Creates salt marshes	Often lose farmland and money must be paid to land owner.

KPI 6: Formation of Spits and Bars

Formation of a spit:

1. Sediment is carried by **longshore drift**
2. When there is a change in the shape of the **coastline**, deposition occurs. A long thin ridge of material is deposited *(dropped)*. This is the spit.
3. A hooked end can form if there is a change in wind direction.
4. Waves cannot get past a spit, therefore the water behind a spit is very sheltered. Silts are deposited here to form salt marshes or mud flats.

Formation of a bar:

1. Sediment is carried by **longshore drift**
2. When there is a change in the shape of the **coastline**, deposition occurs. A long thin ridge of material is deposited *(dropped)*.
3. A spit can grow across a bay, joining two headlands together. This landform is known as a bar.
4. They can trap shallow lakes behind the bar, these are known as lagoons. Lagoons do not last forever and may be filled up with sediment.

Year 9 Topic 4 Knowledge Organiser – How dangerous are tectonic hazards?

Key terms

- **Magma:** melted rock
- **Continental crust:**hick part of the earth's crust which forms the large land masses.
- **Oceanic crust:** the denser crustal layer of Earth that makes up portions of tectonic plates in deep oceans.
- **Epicentre:**he point on the earth's surface vertically above the focus of an earthquake.
- **Focus:** the place inside Earth's crust where an earthquake originates.
- **Conservative plate margin:** Tectonic plate margin where two tectonic plates slide past each other.
- **Constructive plate margin:** Tectonic plate margin where rising magma adds new material to plates that are diverging (*going apart*).
- **Destructive plate margin:** Tectonic plate margin where two plates are converging (*coming together*). It can be linked to violent earthquakes and explosive volcanoes.
- **Earthquake:** A sudden or violent movement within the Earth's crust followed by a series of shocks.
- **Immediate responses:** The reaction of people as disasters happen in the immediate aftermath (*after-effects of an unpleasant event)*
- **Long-term responses:** Later reactions that occur in the weeks, months of years after an event.
- **Monitoring:** Recording physical changes, such as earthquake tremors (*ground shaking)* around a volcano, to help forecast when and where a natural hazard might strike.
- **Plate margin:** The margin (or boundary) between two tectonic plates.
- **Planning:** Actions taken to allow communities to response and recover from natural disasters.
- **Prediction:** Attempts to forecast (predict) where and where a natural hazard might strike based on current knowledge.
- **Primary effects:** The initial impacts of a natural event on people and property, caused directly by it.
- **Protection:** Actions taken before a hazard strikes to reduce its impact, such as educating people.
- **Secondary Effects:** The after-effects that occur as indirect impacts of a natural event.
- **Tectonic Hazards:** A natural hazard caused by the movement of tectonic plates.
- **Tectonic Plate:** A rigid (*not flexible*) part of the Earth's crust which moves across semi-molten *(melted)* rock below.
- **Economic impact:** The effect of an event on the wealth of an area e.g. the impact on businesses and jobs
- **Environmental impact:** The effect of an event on the landscape and ecology of the surrounding area.
- **Social impact**: The effect of an event on the people e.g. deaths and injuries

KPI1 – What causes tectonic plates to move?

Structure of the Earth

1. **The inner core** is in the center and is the hottest part of the Earth. It is solid and made up of iron and nickel with temperatures of up to 5,500°C.
2. **The outer core** is the layer surrounding the inner core. It is a liquid layer, also made up of iron and nickel.
3. **The mantle** is the thickest section of the Earth at approximately 2,900 km. The mantle is made up of semi-molten rock called **magma.**
4. **The crust** is the outer layer of the Earth. It is a thin layer between 0 - 60 km thick. The crust is the solid rock layer upon which we live. It is either **continental** or **oceanic.** The earth's crust is broken into plates.

How do tectonic plates move?

Theory 1: **Convection Currents**
Heat rising and falling inside the mantle creates convection currents. The convection currents move the plates floating on the mantle. Where convection currents diverge *(separate)* near the Earth's crust, plates move apart. Where convection currents converge *(move together)*, plates move towards each other.

Theory 2: **Slab Pull**
The denser plate sinks back into the mantle under the influence of gravity. It pulls the rest of the plate along behind it.

Theory 3: **Ridge Push**
Magma rises as the plates move apart. The magma cools to form new plate material. As it cools It becomes denser and slides down away from the ridge. This causes other plates to move away from each other.

KPI2 – How are tectonic hazards caused?

Destructive Plate Margin

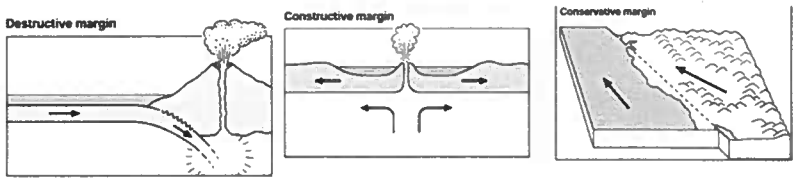
1. A **destructive plate margin** usually involves an **oceanic** plate and a **continental** plate.
2. The plates move **towards** one another, and this movement can cause earthquakes.
3. As the plates collide, the oceanic plate is forced beneath the continental plate. This is known as **subduction.** This happens because the oceanic plate is denser (heavier) than the continental plate.
4. When the plate sinks into the mantle it melts to form **magma.** The pressure of the magma builds up beneath the Earth's surface. The magma escapes through weaknesses in the rock and rises up through a **composite volcano** *cone shaped).* The volcanic eruptions are often violent, with lots of steam, gas and ash.

Constructive Plate Margin

1. At a **constructive plate margin t**he plates move apart from one another.
2. When this happens the magma from the mantle rises up to make (or construct) new land in the form of a **shield volcano** *(low flat shaped)*
3. The movement of the plates over the mantle can cause earthquakes.

Conservative Plate Margin

1. At a **conservative plate margin,** the plates move past each other or are side by side moving at different speeds.
2. As the plates move, friction *(one surface or object rubbing against another)* occurs, and plates become stuck. Pressure builds up because the plates are still trying to move.
3. When the pressure is released, it sends out huge amounts of energy, causing an earthquake.
4. There are no volcanoes at a conservative plate margin.



Year 9 Topic 4 Knowledge Organiser – How dangerous are tectonic hazards?

KPI3 – Why are some volcanoes more dangerous than others?

Structure of a volcano
Volcanoes have distinctive features:
- **magma chamber** - this is where the molten rock is stored beneath the ground
- **main vent** - this is the channel through which **magma** travels to reach the Earth's surface
- **secondary vent** - some magma may escape through the side of the volcano, particularly if the main vent becomes blocked
- **crater** - this is found at the top of the volcano, where the magma erupts from.

Why do volcanoes erupt?
1. Hot, molten rock (magma) has a low density and will rise up through the crust to erupt on the surface.
2. If magma has large amounts of gas and a high viscosity *(sticky)* magma will form an explosive eruption.
3. If magma has a small amounts of gas and (or) low viscosity *(runny)* magma will form a gentle eruption. Where the magma just trickles out of the volcano (lava flow).

Types of Volcanoes
Shield Volcano - found on **constructive plate margins**, where two plates move away from one another. Shield volcanoes have the following characteristics:
- basic lava, which is non-acidic and very runny
- gentle sides as the lava flows for long distances before it solidifies
- no layers, as the volcano just consists of lava
- less violent eruptions
- shorter periods between eruptions

Composite Volcano – found when the oceanic crust sinks beneath the continental crust. Composite volcanoes have the following characteristics:
- **Acidic lava**, which is very viscous (sticky).
- Steep sides as the lava doesn't flow very far before it solidifies *(becomes hard)*
- Alternate layers of ash and lava. For this reason, they're also known as **stratovolcanoes.** Strato means layers.
- Violent eruptions.
- Longer periods between eruptions.

KPI4 – What hazards are produced by volcanoes?

1. **Pyroclastic flows** - A pyroclastic flow is a thick cloud of volcanic ash and gas. As they are heavier than air, they flow from volcanoes down into valleys. Pyroclastic flows move at speeds of over 100 km per hour and can easily flow 8km from a volcano. The temperatures inside a pyroclastic flow can be between 200°C and 700°C, meaning it burns and destroys everything in its path

1. **Ash clouds** - Volcanic ash is a mixture of rock, mineral, and glass particles expelled *(forced out)* from a volcano during a volcanic eruption. The particles are very small—less than 2 millimeters in diameter. Due to their tiny size and low density, the particles that make up volcanic ash can travel long distances, carried by winds. Volcanic ash can be dangerous because its particles are very hard and usually have jagged edges. As a result, it can cause eye, nose, and lung irritation, as well as breathing problems. Also, while in the air, ash can cause problems for jet engines, forcing airlines to cancel flights through the affected area.

1. **Volcanic bombs** - Volcanic bomb is pyroclastic rock that is a cooling of a mass of lava it flies through the air after eruption. If it is to be called a bomb, a specimen must be larger than 2, 5 inch diameter. Volcanic bombs are heavy and often fly at high speed. However, bombs do not travel very far.

1. **Lahars** - A lahar is a fast-flowing mudflow (up to 70km per hour) that is made up of volcanic ash and either:
   a. Hot water (from the lake in the volcanoes **crater)** or,
   b. Cold water (from melting snow and ice). Lahars have a texture very similar to concrete.

1. **Volcanic flows** - Lava flows are streams of molten rock that pour or ooze from an erupting vent. The speed at which lava moves across the ground depends on several factors including:
   a. type of lava erupted and its viscosity
   b. steepness of the ground over which it travels
   c. whether the lava flows as a broad sheet, through a confined channel, or down a lava tube
   d. rate of lava production at the vent.

Everything in the path of an advancing lava flow will be knocked over, surrounded, buried, or ignited by the extremely hot temperature of lava. Deaths caused directly by lava flows are uncommon because most move slowly enough that people can move out the way easily.

Year 9 Topic 4 Knowledge Organiser – How dangerous are tectonic hazards?

KPI 5 – Why do people live near tectonic hazards?

1. **Geothermal Energy:** Water is pumped into permeable rock, the natural heat in volcanic areas turns that water into superheated steam, which turns the turbine to create electricity. 30% of Iceland's electricity is Geothermal energy.
2. **Farming:** Weathering of volcanic lava & ash leaves fertile soil rich in nutrients. Farming in volcanic soils supports 10% of the world's population.
3. **Mining:** Volcanic eruptions create minerals which generates thousands of jobs. Sulphur from Indonesia is used to bleach sugar, make medicines , matches & fertiliser.
4. **Tourism:** More than 100 million tourists visit volcanic sites every year, generating thousands of jobs and income for countries.

KPI 6 – Can people manage risk living near volcanoes?

- **Prediction:** Volcanologists (someone who studies volcanoes) monitor volcanoes all over the world and take readings to determine change so they can predict when a volcano is likely to erupt. One method of prediction is thermal *(heat)* imaging.

- **Planning:** Helps communities to respond and recover from a natural disaster, such as a volcanic eruption. It includes drawing up evacuation plans and using hazard maps to prevent building in high risk areas where lava might flow.

- **Preparation**: Involves educating people on what to do if a volcano erupts such as preparing leaflets and videos giving advice on how to protect yourself.

KPI 8 – What causes tsunamis?

A **tsunami** can be triggered by events like landslides and volcanoes, however most tsunamis are caused by earthquakes at **destructive plate boundaries.**

1. A sudden shift in plate movement causes water displacement *(moving something)* at the **epicentre**
2. Large waves move along the seabed away from the epicentre
3. As the waves move from deep water to shallow water near the coastal area, they increase in height and break

KPI 9 – How can we manage tsunamis?

Sea Wall: In Japan sea walls up to 14 metres high have been built to offer two key protections:

1. Bouncing back the power of the waves, which reduces damage
2. Buying time for evacuation.

Early Warning System: The Pacific Tsunami Warning System is made up of a network of seismic-monitoring stations and sea level gauges. These detect earthquakes and changes in sea level.

KPI 10 - Describe and explain the causes, impacts and responses of the Boxing Day Tsunami

Date: 26th December 2004
Location: Indian Ocean impacting over 13 countries
Cause: An earthquake measuring more than magnitude 9. The earthquake caused the seafloor to uplift, displacing the seawater above.
Impacts:

- 250.000 people died.
- Two million people were made homeless.
- People were swept away in the waters, which arrived rapidly and with little warning.
- Thirteen countries were affected, the worst being Indonesia.
- Indonesia was hit by the tsunami first. Forty-five minutes later the tsunami reached Thailand.

Responses:

- Short-term aid, such as water purification tablets, temporary housing and medical supplies were given from international countries.
- Islands reliant on tourism and fishing, such as the Maldives, had to rebuild their industries.
- An early warning system between countries surrounding the Indian Ocean has been set up.

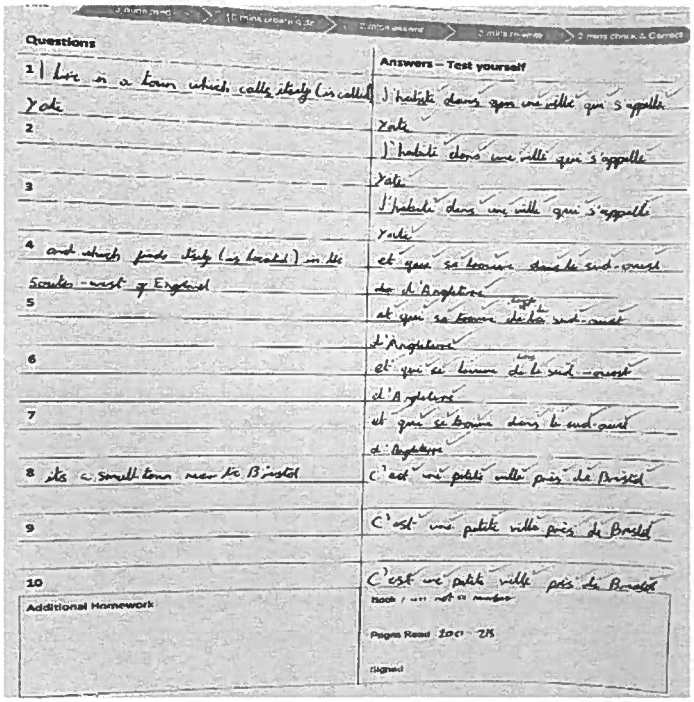
Year 9 Term 2 French – Qui suis-je?

1	Dans ma famille il y a cinq personnes	In my family there are five people
2	y compris moi, mon père, ma belle-mère, ma demi-sœur et mon neveu.	including me, my dad, my step-mum, my half sister and my nephew.
3	Moi j'ai les cheveux roux et mi-longs et des boutons.	I have red, mid-length hair and spots.
4	Mon père porte des lunettes et il a une barbe grise.	My dad wears glasses and he has a grey beard.
5	Je dirais que ma demi-sœur est sage, aimable et charmante	I would say that my half sister is wise, likeable and charming
6	donc nous nous entendons très bien.	therefore we get on very well.
7	Cependant, de temps en temps je me dispute avec ma belle-mère	However, from time to time I argue with my step-mum
8	car je la trouve têtue et méchante.	because I find her stubborn and mean.
9	Pour moi, un bon ami est drôle et il dit toujours la vérité.	For me, a good friend is funny and he always tells the truth.
10	Ma meilleure amie, qui s'appelle Monique, est géniale.	My best friend, who is called (calls herself) Monique, is great.
11	D'habitude on va ensemble au centre-ville.	Usually we go together in the town centre.
12	Il y a un grand centre-commercial où on peut faire les magasins	There is a big shopping centre where you can do shopping
13	et devant le centre-commercial il y a un bowling.	and in front of the shopping centre there is a bowling alley.
14	Ce week-end on va aller au cinéma pour regarder un film	This weekend we are going to go to the cinema (in order) to watch a film
15	et après je vais aller à la patinoire.	and after I'm going to go to the ice-rink.
16	Hier soir, je suis allée à un resto avec mon petit-copain.	Last night, I went to a restaurant with my boyfriend.
17	Nous avons mangé de la nourriture chinoise, c'était absolument délicieux.	We ate Chinese food, it was absolutely delicious.
18	Mon modèle est Kylian Mbappé, c'est un footballeur qui joue pour le PSG.	My role model is Kylian Mbappé, he is a footballer who plays for PSG.
19	Je l'admire car il a travaillé très dur pour devenir footballeur professionnel	I admire him because he worked really hard (in order) to become a professional footballer
20	et il m'impressionne énormément.	and he impresses me a lot.

MFL key classroom language:

Key Word	Definition	Example
Infinitive	In English it is always accompanied by the word **"TO"**. In French, it always ends in **ER/IR/RE** E.g: **to** play, **to** do, **to** go, **to** go out. jouer / faire / sortir	An opinion is always followed by an infinitive: <u>J'aime</u> jouer/ faire/ acheter <u>I like</u> **to play/to do/to buy**
Cognate	A word that is similar in spelling and meaning in two languages	This word is a cognate, what do you think it means? e.g. télé-réalité = TV reality
Connectives	A word that links two sentences or ideas together, e.g. et / cependant	What connective can we use to link these two sentences ? • j'aime l'histoire **(mais)** je déteste l'anglais • I like history **but** I hate English
Intensifiers	A word that strengthens the meaning of other expressions and shows emphasis, e.g. très/assez	Every time you write an adjective, make sure you use an intensifier before it. • je pense que le sport est très important • I think that sport is very important

Example of a French/Spanish LSQ:



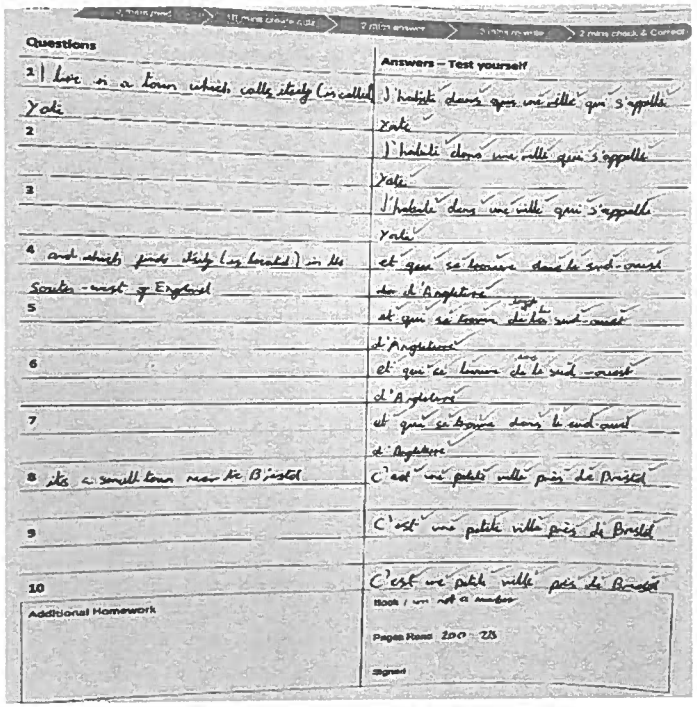
Questions	Answers – Test yourself
1 I live in a town which calls itself (is called) Yate	J'habite dans une ville qui s'appelle Yate
2	J'habite dans une ville qui s'appelle Yate
3	J'habite dans une ville qui s'appelle Yate
4 and which finds itself (is located) in the South-west of England	et qui se trouve dans le sud-ouest de l'Angleterre
5	et qui se trouve dans le sud-ouest d'Angleterre
6	et qui se trouve dans le sud-ouest d'Angleterre
7	et qui se trouve dans le sud-ouest d'Angleterre
8 It's a small town near to Bristol	C'est une petite ville près de Bristol
9	C'est une petite ville près de Bristol
10	C'est une petite ville près de Bristol
Additional Homework	Book / unit / set of numbers Pages Read 100 - 25 Signed

Year 9 Term 2 Spanish – Vacaciones

1	Normally during the holidays	Normalmente durante las vacaciones
2	when it is good weather I go horse riding (I ride a horse)	cuando **hace** buen tiempo **monto** a caballo
3	or I go to the beach with my friends.	o **voy** a la playa con mis amigos.
5	When it rains I love to watch TV with my siblings	Cuando llueve **me mola ver** la tele con mis hermanos
6	but I prefer to read comics in my room.	pero **prefiero leer** los tebeos en mi dormitorio.
7	Sometimes I go on holiday to Spain with my family	A veces **voy** de vacaciones a España con mi familia
8	but I prefer to spend the holidays with my friends.	pero **prefiero pasar** las vacaciones con mis amigos.
9	Last year I went on holiday to London with my parents.	El año pasado **fui** de vacaciones a Londres con mis padres.
10	We travelled by car because it's faster than by train.	**Viajamos en** coche puesto que es más rápido que en tren.
11	I stayed in a hotel, it was modern and expensive.	**Me alojé** en un hotel, era moderno y caro.
12	When it was bad weather I relaxed in the hotel.	Cuando **hizo** mal tiempo descansé en el hotel.
13	When it was sunny I visited monuments in the centre.	Cuando **hizo** sol visité monumentos en el centro.
14	The best thing was when I went to the aquarium.	**Lo mejor fue cuando** fui al acuario.
15	The worst thing was when I lost my phone at the airport.	**Lo peor fue cuando** perdí mi móvil en el aeropuerto.
16	The good thing about the town was that it was very lively.	Lo bueno del pueblo **era** que **era** muy animado.
17	The bad thing about the town was that there was lots of traffic.	Lo malo del pueblo **era** que **había** mucho tráfico.
18	I liked my trip because it was so unforgettable.	Me **gustó** mi viaje porque **fue** inolvidable.
21	I want to reserve a double room with views of the sea.	**Quiero reservar una habitación** doble con vistas al mar.

22	I want to complain because the air conditioning does not work.	**Quiero quejarme** dado que el aire acondicionado **no funciona.**

Example of a French/Spanish LSQ:



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Additional Homework	Book / on set a number Pages Read 200 - 215 Signed

MFL key classroom language:

Key Word	Student-friendly definition	Example
Infinitive	In English it is always accompanied by the word **"TO"**. In Spanish, it always finishes in **"R" (-ar/-er/-ir)** E.g: **to** play, **to** do, **to** go, **to** visit. jugar/ hacer / ir / visitar	An opinion is always followed by an infinitive: Me gusta jugar/ hacer/ comprar I like **to play/to do/to buy** After suelo/solía, you always need an infinitive: suelo ver /jugar/descansar I tend **to watch/to play/to rest**
Cognate	A word that is similar in spelling and meaning in two languages,	This word is a cognate, what do you think it means? e.g. ciclismo = cycling
Connectives	A word that links two sentences or ideas together, e.g. y/por otro lado	What connective can we use to link these two sentences ? • Me gusta la historia **(pero)** odio el ingles • I like history **but** I hate English
Intensifiers	A word that strengthens the meaning of other expressions and shows emphasis, e.g. muy/bastante	Every time you write an adjective, make sure you use an intensifier before it. • Creo que las ciencias son **muy** interesantes • I think science is **very** interesting

Year 9 Living in a multicultural society Why do some people treat others differently?

Migration	the movement of people from one permanent home to another
Emigrate	To leave
Immigrants	People who move into another country
Immigration	The movement of people into a country
Refugee	A person who is seeking safety, granted refugee status
Persecution	Hostility and ill-treatment, especially because of race or political or religious beliefs; oppression
Asylum seeker	Is someone who has fled his or her home country and is seeking refugee status in another country.
Interfaith	Activities involving members of different religions
Community Cohesion	A common vision and shared sense of belonging for all groups in society
Eightfold path	"Right Speech"
1951 Refugee Convention	Guarantees everybody the right to apply for asylum
Sanctity of life	All life is sacred and God given
Hatred	One of the three poisons in Buddhism
Metta	Loving Kindness
Dukkha	Suffering

KPI4: Religious responses towards immigration and asylum seekers

Many Hindu teachings emphasise that all living things, including human beings, are expressions of the same and equal worth.

Hindus believe in karma or 'intentional action'. Discrimination based on birth, skin colour, social or economic status or any other factor is negative action that will result in karmic debt. The Bhagavad Gita states (Hindu scriptures):
"I am equal to all beings; none are hated by me and none are particularly dear."
Bhagavad Gita 9:29

The greeting 'namaste' (bowing to you) illustrates the belief that everyone is part of one divinity and should all be treated with respect.
https://www.bbc.com/bitesize/guides/zg3c7ty/revision/6

KPI 5: Investigate the term asylum seekers and refugee

An asylum seeker is a person who has fled from his or her own country due to fear of persecution (ill treatment) and has applied for (legal and physical) protection in another country but has not yet had their claim for protection assessed.
A person remains an asylum seeker until their protection 'status' has been determined.
A refugee is a person who has fled his or her own country and cannot return due to fear of persecution, and has been given refugee status. Refugee status is given to applicants by the United Nations or by a third party country.

KPI 6 Explain how major religious festivals are celebrated

Wesak is the most important of all the Buddhist festivals. It honours the Buddha's enlightenment (awakening) and is celebrated on the full moon in April or May. As well as honouring and reflecting on the Buddha's enlightenment, its value also lies in making suitable gifts to the temple, from the communal celebration, and in the opportunity to learn more about the Buddha's teachings.
For Buddhists in Theravada countries (traditional Buddhist counties) , the festival also marks the Buddha's birthday and the day of his death. Theravada Buddhists believe that all of these events happened on the same day.
To celebrate, they might do some or all of these things:

- visit the local temple for services and teachings
- wear white clothing, at least on their upper body and generally look smart
- give offerings to the monks, eg money, food, candles and flowers
- decorate shrines
- chant and pray
- clean and decorate their homes

https://www.bbc.com/bitesize/guides/zd4dtfr/revision/1

Divali

Divali is probably the most well-known and popular Hindu festival. The word 'Divali' translates as 'full of light' and Divali is known as the festival of lights because of this.
The festival celebrates the victory of good over evil, light over darkness and knowledge over ignorance, although the legends that go with the festival differ in the following ways:
Many Hindu homes, shops and public places are decorated for Divali. Lights are the main feature, eg fairy lights and candles, as well as traditional diva.

RE Year 9 Living in a multicultural society Why do some people treat others differently?

Multicultural	Society including people from several different cultures.
Cultural diversity	Appreciation that society is made up of many different groups, interest, skills and beliefs.
Interculturalism	Interactions of diverse cultures and achievement of shared cultural expressions
Tolerance	The permitting of social, cultural, religious difference without protest
Diversity	The difference in customs, religious beliefs or opinions
Integration	The action or process of successfully joining or mixing with a different group of people
Xenophobia	Fear of foreigners
Universal declaration of Human Rights, Article 9	Everyone has the right to freedom of thought, conscience and religion'.

KPI1: How has Britain become a multicultural society

Britain in the 20th century

There was immigration into Britain towards the end of the 19th century when many migrants, Jewish people in particular, fled from persecution and poverty in Eastern Europe. They tended to settle in urban centres, particularly London, but also Leeds and some other northern towns. During the 20th century, immigration into Britain encouraged the development of diverse cultural experiences and understanding within society. Cultural integration brought music, literature, art, food and fashion from different parts of the world, particularly from places that had been part of the British Empire and then the Commonwealth – and it also impacted things like business and sport.

KPI2: Advantages and disadvantage of a multicultural society

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Advantages	Disadvantages
A richer and more diverse culture	Increasing cost of services such as health care and education
Helps to reduce any labour shortages	Overcrowding
Migrants are more prepared to take on low paid, low skilled jobs	Disagreements between different religions and cultures

This migration and multiculturalism has many advantages. It enriches huge areas of UK cultural life, from the amazing array of food that is available on nearly every high street in UK cities to the music variety we have (the BBC's Asian Radio channel is a great example of this). Multiculturalism is not without its difficulties however, and these problems need managing carefully managing.

KPI3: To explore reason why people migrate

Migration is the movement of people from one permanent home to another. This movement changes the population of a place. International migration is the movement from one country to another.

People who leave their country are said to emigrate. People who move into another country are called immigrants. The movement of people into a country is known as immigration. Sometimes people have a choice about whether they move, but sometimes they are forced to move. The reasons people leave a place are called the push factors. The reasons people are attracted

KPI4: Religious responses towards immigration and asylum seekers

Christians believe that all humans are made in the image of God. Therefore, any action that devalues a person is an insult to God who created and loves that person.

Many Christian charities work around the world in countries affected by war. CAFOD (Catholic Agency for Overseas Development) is an example of a Christian charity that helps people in countries affected by war and natural disasters.

Some of the things that CAFOD does to help victims of war include:
helping to rehabilitate children who have fought as soldiers in war, offering them education, counselling and support attempting to bring together warring groups to find alternative ways of dealing with conflict providing refugees fleeing conflict with emergency aid, such as food, shelter and cooking equipment

Matthew 25:35 'For I was hungry and you gave me food, I was thirsty and you gave me drink, I was a stranger and you welcomed me'.
Leviticus 25:35'If any of your fellow becomes poor help them as you would a foreigner and stranger, so they can continue to live among you.'
Leviticus 33-34 "When a foreigner lives with you in your land, don't take advantage of him. Treat the foreigner the same as a native. Love him like one of your own.

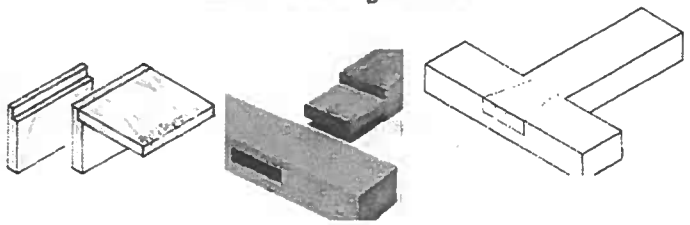
DESIGN & TECHNOLOGY

1: Joining Methods

Wood joints can be either permanent of temporary depending on the type and if glue is used.

Permanent:	Temporary:
When we do not want to take the pieces apart again	When we will, or might need to take pieces apart again
Glues, welding, rivets	Screws, bolts, nails

1.1Wood joints



Lap Joint | Mortise + Tennon Joint | Dovetail Joint

2. Scales of Production

<u>One off</u>: when you make a unique item

<u>Batch</u>: when you make a few/set amount

<u>Mass</u>: when you make thousands

<u>Continuous</u>: open ended production

3. Adhesives

<u>P.V.A.</u> – Poly Vinyl Acetate – best for joining 2 pieces of wood together

<u>Epoxy</u> – a *thermosetting* resin that can be used to bond most types of material

<u>Contact Adhesive</u> – a glue type that creates a tacky bond on both surfaces to be joined. It can be used with most materials.

4: Materials

4.1 Woods:

Hardwoods:	Softwoods:
Beech	**Scots Pine**
Oak	Cedar
Ash	Spruce

4.2 Engineered Boards

Engineered boards are manmade materials usually made by mixing wood chips and glues to make wooden sheets.

Examples:
Medium Density Fibreboard (MDF)
Chipboard, Plywood and **Hardboard**

4.3 Plastics

Plastics are made of polymers, and are mostly refined from oil. There are 2 main categories:

Thermoplastics	Thermosetting plastics
Acrylic	Urea Formaldehyde
Polypropylene (PP)	Melamine Formaldehyde
High Impact Polystyrene (HIPS)	Epoxy Resin

4.4 Metals

Metals are hard and usually shiny, containing one or more elements dug and refined from the ground

Ferrous metals are any metal that contains iron and will rust	Non-Ferrous metals do not contain iron and will not rust

Alloys are metals made from a mix of 2 metals – brass is made of copper and zinc.

***Composite** materials* are a mix of 2 different types of material to get the best qualities from each – eg: GRP (Glass Reinforced Plastic)

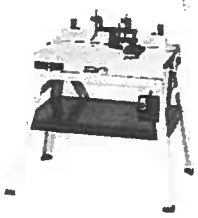
5: TOOLS


Try square


Bench Hook


Vice


PVA Glue


Router Table


Mallet


Laser Cutter


Chisel


Tenon Saw

6: Surface Finishes

Finishing is usually one of the last stages of making a project. It will usually involve sanding and applying a surface coating to **protect** your material and **improve its visual appearance.**

<u>Some examples:</u>
Paint, Stain, Varnish, Oil, **Danish Oil**, Wax, Polish & Dip Coating.

7: KEY WORD FOCUS

You should be able to explain the meaning of each of these words by the end of this rotation.

CAD	Computer Aided Design
CAM	Computer Aided Manufacture
CNC	Computer Numerical Control

Year 9 – Food Technology

Malnutrition (Deficiencies/Excesses & Effects on Health)

Malnutrition	There is a link between a poor diet, and the risk of developing some diseases. This includes the risk of: *cancer; *Coronary heart disease (CHD); *bone health; *anaemia. Having intakes of energy and/or nutrients below or in excess of needs for long periods of time can affect health. The risk of malnutrition is increased by: *increased requirements for some nutrients *restricted range of foods; *reduction in available income; *very low income; *medical conditions; *psychological conditions.
Undernutrition	Worldwide, Kwashiorkor and marasmus are two common diseases caused by a lack of protein and energy. Fat soluble vitamins (A, D, E and K) are stored in the body so it takes time for deficiency diseases to develop.
Diet and Cancer	The World Cancer Research Fund has released nine cancer prevention recommendations *Be a healthy weight *Move more *Avoid high-calorie foods and drinks *Enjoy more grains, veg, fruit and barley. Limit intake of red meat and avoid processed meat *Don't drink alcohol *Eat less salt *Don't rely on supplements. Breastfeed your baby.
Diet & Coronary Heart Disease	It is believed that 80% of CHD and strokes could be prevented by changes to lifestyle factors, such as diet, physical activity and smoking. Changes to the diet to reduce the risk of CHD include: *increasing oily fish intake; *reducing salt intake; *increase fruit and vegetables; *decreasing alcohol consumption.
Bone Health	Calcium is important for strong bones. Vitamin D is needed for calcium to be absorbed from food.
Anemia	Iron is vital for making red blood cells. Iron from the diet forms haemoglobin, which carries oxygen in the blood. Anaemia develops if the body's stores of iron are too low.
Obesity	People who are obese are more likely to suffer from CHD, type 2 diabetes, gall stones, arthritis, high blood pressure and some types of cancers, i.e. colon, breast, kidney and stomach.
Inactivity	It is also important that the amount of time being sedentary is reduced. Over time, sedentary behaviour can lead to weight gain and obesity, which can increase the risk of developing chronic diseases in adulthood.

Food Labelling

Packaging Information	Information on the labels of pre-packed food and drink products can be legally required or just for consumer information. Legally required information is: country of origin and place of provenance (where an ingredient is from); date mark; list of ingredients (including additives and allergens); name and address of the manufacturer, packer or seller; name of food or drink; nutrition information; storage and preparation instructions; weight or volume. Consumer information (not a legal requirement) front-of-pack nutrition label; price; serving suggestions/image.

Year 9 – Food Technology

Functional Characteristics of Ingredients

Selecting Ingredients	Ingredients are chosen for a number of reasons, *to add flavour, colour or texture *to provide a particular function, e.g. to thicken *to provide nutrients or change the nutritional profile of a dish, e.g. to increase fibre *to extend the shelf life, e.g. vinegar for pickling or chemical preservatives *cost and availability, e.g. fruit in season *to satisfy a need to buy food with a certain provenance, e.g. Red Tractor.
Adding Flavour, Colour or Texture	• Fresh and dried herbs and spices can be added to dishes to provide flavour and replace the salt in some dishes, • Fruit, vegetables, herbs and spices can all be used in recipes to add colour. • Nuts, seeds, grains, fruit and vegetables can be added to recipes to provide texture. • The cooking method and cooking time can impact the texture, e.g. steaming or microwaving vegetables quickly can retain their colour, flavour and firm texture. • Equipment used to process food can impact the texture - blending soup for a smoother texture.
Ingredient functions in recipes	**browning**, e.g. flour in a bread roll (dextrinisation); **raising**, e.g. yeast in bread (aeration); **setting**, e.g. scrambled eggs (coagulation); **thickening**, e.g. flour in a roux sauce (gelatinisation).
Raising Agents	**mechanical**, e.g. beating, creaming, rolling and folding, sieving, whisking; **chemical**, e.g. baking powder, baking powder, self-raising flour; **biological**, e.g. yeast. Different foods may use one or more of these to achieve a desirable end result.
Tenderisation	Mechanical tenderising – a meat cleaver or meat hammer may be used to beat the meat. Cutting into small cubes or mincing can also help. Chemical tenderisation (marinating) –the addition of any liquid to flavour or soften meat before cooking.

Glossary

Key Terms	**Aeration**: Incorporating air into a mixture. **Caramelisation**: The chemical change of heated sucrose (sugar) to caramel, which produces flavour and browning. **Coagulation**: The irreversible denaturation of protein molecules to thicken and set. **Denaturation:** A change in the structure of protein molecules, resulting in their unfolding. **Dextrinisation**: The reaction of dry heat on the surface of food which changes starch to dextrin, e.g. toast. **Gelatinisation**: The process of thickening which takes place when a mixture of starch and liquid is heated. **Shortening**: The effect caused when fat is rubbed into flour (rubbing in method - crumble. The fat coats the flour particles, waterproofing them to prevent gluten formation. **Allergen:** An ingredient that may cause an adverse reaction to food. **Back-of-pack labelling**: Is legally required and can help consumers make healthier choices. **Front-of-pack labelling**: Is voluntary but must provide certain information and can use red, amber and green colour coding. **Use-by-date:** Relates to the safety of the food. Food must be eaten by this date. **Best-before-date:** Relates to the quality of the food. Food may still be eaten beyond this date.

Art - Year 9 - Mental Health Project

Formal Elements

Line
A mark that connects two or more points. These can be straight, curved, short or long.

Tone
The lightness or darkness or something. For darker tones use a higher grade B pencil.

Colour
Colour is what you see when light reflects of something.

Texture
How something looks or feels e.g. fluffy, rough, smooth etc.
Visual Texture - implied sense of texture that the artist creates through the use of various artistic elements such as line , shading, and colour.
Physical Texture - texture you can actually feel with your hand

Pattern
A symbol, shape or colour that repeats. Man-made patterns are designed by humans, natural patterns are formed by nature.

Shape/Form
Shape is 2D e.g. rectangles. Form is 3D e.g. cubes, spheres etc.

Colour Theory

Primary Colours
Colours that can't be mixed/ made from other colours e.g. red, yellow and blue.

Secondary Colours
Colours that can be made by mixing two primary colours.
Red + Blue = Purple
Yellow + Blue = Green
Yellow + Red = Orange

Tertiary Colours
Colours that can be made by mixing a primary and secondary colour together e.g. Blue + Green = Turquoise.

Complementary Colours
Colours that are opposite each other on the colour wheel.
Blue & Orange
Red & Green
Purple & Yellow

Analogue/ Harmonious Colours
Colours that are next to each other on the colour wheel e.g. Red, red-orange and orange.

Tints/ Shades
Tint - Adding white to a colour to make it lighter.
Shades - Adding black to a colour to make it darker.

Tips, Tools & Techniques

Grid-Method
A method of drawing to recreate, enlarge or reduce an image ensuring accurate proportions.

Mono-Printing
A form of printmaking that has lines or images that can only be made once.

Shading Techniques
Hatching, Cross-Hatching, Stippling and Scumbling.

Blender Stick
A paper stump that allows you to blend tones.

Blending
The smooth transition between tones.

Continuous Line Drawing
A drawing technique in which the line remains unbroken from the beginning to the end. The drawing implement e.g. pen or pencil stays in uninterrupted contact with the surface of the paper during the entire length of the drawing

Thumbnail Designs
Small sketches outlining ideas in a simplistic way.

Keywords, Concepts & Artists

Proportion
The size and relation of objects to one another. Using the grid-method is one way of helping you draw using accurate proportions.

Composition
This is where you place objects on a page. You can explore different layouts such as close up, far away, busy, quiet, off centred, clustered.

Mixed Media
Artwork in which more than one material has been used.

Portraiture
A piece that depicts a human face or figure.

Vincent Van Gogh (1853-1890)
The iconic tortured artist, Vincent Van Gogh strove to convey his emotional and spiritual state in each of his artworks. Van Gogh used an impulsive, gestural application of paint and symbolic colours to express subjective emotions.

DRAMA year 9 - Brecht

<table>
<tr><th>Context on Brecht's life</th><th colspan="3">Brechtian techniques</th></tr>
<tr><td rowspan="4">Bertolt Brecht (1898 - 1956) was a German theatre practitioner, playwright and poet. After serving as a medical orderly in the First World War and being appalled by the effects of war, Brecht moved to Munich and later Berlin to pursue a career in theatre. However, the rise of the Nazi party forced Brecht to flee as he held strong views against their ideology.

Brecht officially became an American citizen in 1941 but returned to Europe after the Second World War to continue his theatrical career. By the time of his death, he had founded the Berliner Ensemble, a theatre company based in Berlin that has gone on to become one of the most influential in the world. They are primarily dedicated to Brecht's vision of epic theatre, a style of theatre that aims to tackle the biggest political and social issues in modern society.

When Brecht rose to prominence, the main style of theatre around the world was naturalism. Brecht hated everything that naturalism stood for and instead felt that theatre had a duty to inform and educate audiences. He used many non-naturalistic techniques such as minimal set, costume and lighting to constantly remind the audience that the performance was not real. Brecht felt that if the audience was too engaged in the action, they would lose sight of the message so frequently used non-naturalistic techniques to reaffirm the purpose of the production.</td><td>The V effect - Verfremdungseffekt - Many people speak of alienating the audience (making them separate from the action) but verfremdungseffekt actually translates more closely to 'distancing.' However, it's still often called the alienation effect or is shortened to the 'v' effect and there are many ways of using it. Brecht definitely wanted his audience to remain interested and engaged by the drama otherwise his message would be lost. It was an emotional investment in the characters he aimed to avoid.</td><td>Gestus and Spass - Meaning 'Gesture' and 'Fun', these methods of overexaggerating performances allowed Brecht to satirise serious subjects and shock his audience. Big, expressive gestures would often be symbolic and used instead of words to capture a particular emotion whilst Brecht also enjoyed poking fun at hard hitting issues as a way of subconsciously highlighting moral messages to his audiences through laughter. These methods were also used as ways of breaking up tension and allowing comic relief in what could otherwise be extremely serious and sensitive dramatic moments.</td><td>Lighting (or lack of) - Brecht believed in keeping lighting simple as he didn't want the production values to overshadow the message of the work. He believed in using harsh white light as this illuminates the truth. However, many modern productions do use lighting effects. The important thing is that the audience still see the theatre, so often they will see production personnel, such as backstage crew, in action on the stage rather than hidden.</td></tr>
<tr><td>Structure - Scenes were often performed out of order deliberately using flashbacks so that the audience had to think carefully about the messages they were supposed to be receiving.</td><td>Direct address - Speaking directly to the audience breaks the fourth wall and destroys any illusion of reality. An example would be the moment where Grusha pleads to save baby Michael in The Caucasian Chalk Circle by Brecht: "I brought him up, shall I also tear him to bits? I can't."</td><td>Narration - Narration is used to remind the audience that what they're watching is a presentation of a story. Sometimes the narrator will tell us what happens in the story before it has happened. This is a good way of making sure that we don't become emotionally involved in the action to come as we already know the outcome.</td></tr>
<tr><td>Split role - This is where more than one actor plays the same character. For instance, the actor playing the main character might rotate from scene to scene. This keeps that character representational and inhibits emotional involvement and attachment on the part of the audience. This should not be confused with multi rolling which means that one actor plays more than one character.</td><td>Minimal set/costume/props - Set, costume and props are all kept simple and representational. Elaborate costumes might mean that the sense of theatre, of pretending to be something else, was lost. Actors often used mime instead of actual objects as a visual reminder that the performance was not real.</td><td>Coming out of role/third person narration - Commenting upon a character as an actor is a clear way of reminding the audience of theatricality. For example, midway through a heightened scene the action might break for the actor to comment upon their character in the third person, 'Darius felt his anger rise. He wasn't being listened to and wanted revenge', before returning to the scene</td></tr>
<tr><td colspan="3">Placards - A sign or additional piece of written information presented on stage. These were often used to symbolically display the passing of time or an event or even somebody's name/role. Brechtian characters often didn't have names - they would simply be called 'Man 1', 'Girl', 'Police officer', etc. This was done to prevent the audience feel attached to the characters.</td></tr>
</table>

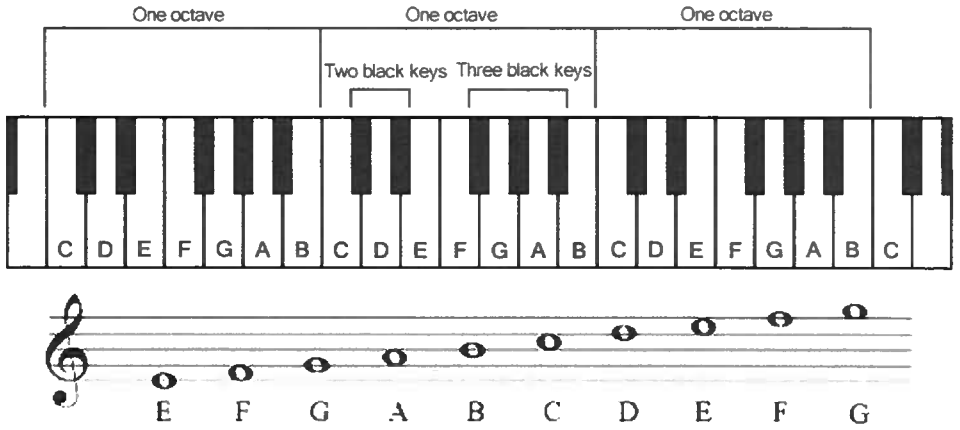
MUSIC - The Elements of Music

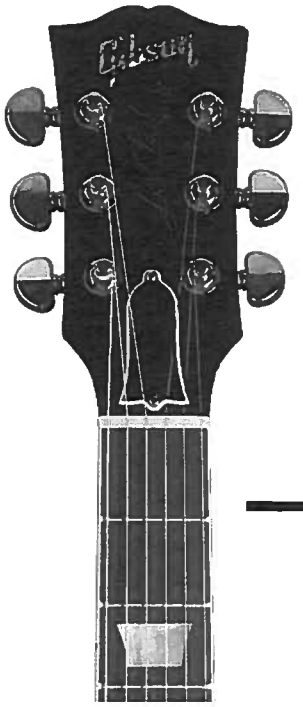
Key Terminology

Conductor - A person who directs the performance.
Note - A singular sound.
Chord - A group of three or more notes played at the same time.
Harmony - Different notes played or sung together.
Melody - A small arrangement of notes that make a tune.
Scale - A series of eight notes starting somewhere between A-G.
Arpeggio - When you play the 1st, 3rd, 5th, and 8th note of a scale one after each other.
Rhythm - The pattern of how notes are played.
Beat - The pulse or heartbeat of the music.
Tempo - The speed of the music.
Dynamics - The volume of the music.
Octaves - The jump between the same note going higher or lower on the piano (e.g. lower C to higher C).
Pitch - How high or low the notes are played.
Guitar - 6-stringed instrument. Can be electric or acoustic.
Bass Guitar - Low sounding 4-stringed instrument. Usually electric.
Piano/Keyboard - Percussion instrument made up of white keys and black keys.
Drum Kit - Percussion instrument made up of drums and cymbals.

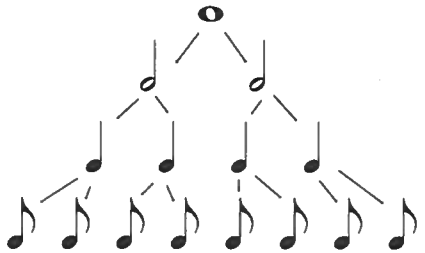
Feedback Starters

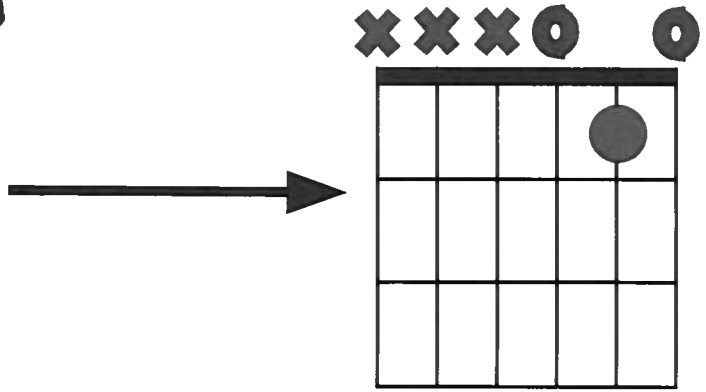
Positives: ***What I thought went well was...***
Points for improvement: ***It would be even better if...***





Whole (4)
Half (2)
Quarter (1)
Eighth (½)





Year 9 Unit 5 -Python

Lesson 1

Describe what algorithms/sets of computer instructions and programs are and how they differ.

An algorithm/set of computer instructions is a set of instructions created in order to solve a problem. An algorithm/set of computer instructions is written in what is known as pseudocode. Pseudocode is written similar to how a program is written but without all the syntax (commas, brackets, colons etc)/ (the set of rules for forming language). A programmer will then take the pseudocode and turn it into a computer program. Algorithm/Sets of computer instructions s are similar/are just like to a program but they are not written using a programming language.

What needs to happen to a completed computer program before it can be executed/ran/run by the computer?

Programming languages have been developed to help humans write computer programs. A computer cannot directly understand the programs that are written. They must first be converted into binary form (1's and 0's) using a translator. Only then can a computer execute/run those programs.

Give an example of a simple Python program that displays a message,assigns a value to a variable/(number or thing that changes), and receive keyboard input

This is where the variable name is declared.

This tells the computer to expect an input and to save it in the variable "name"

This tells the computer to display "Please enter your name" on the screen

```
1  name = input("Please enter your name")
2  print("Nice to meet you",name)
```

This tells the computer to display on the screen "Nice to meet you" followed by the value stored in the variable name.

Keywords

Algorithm/Set of computer instructions
An algorithm/Set of computer instructions is a list of instructions, used to solve problems or perform tasks/(do/complete).

Program
A program is a set of operations for a computer to perform/(do/complete).

Programming language
A programming language is a language that can be used to control a computer.

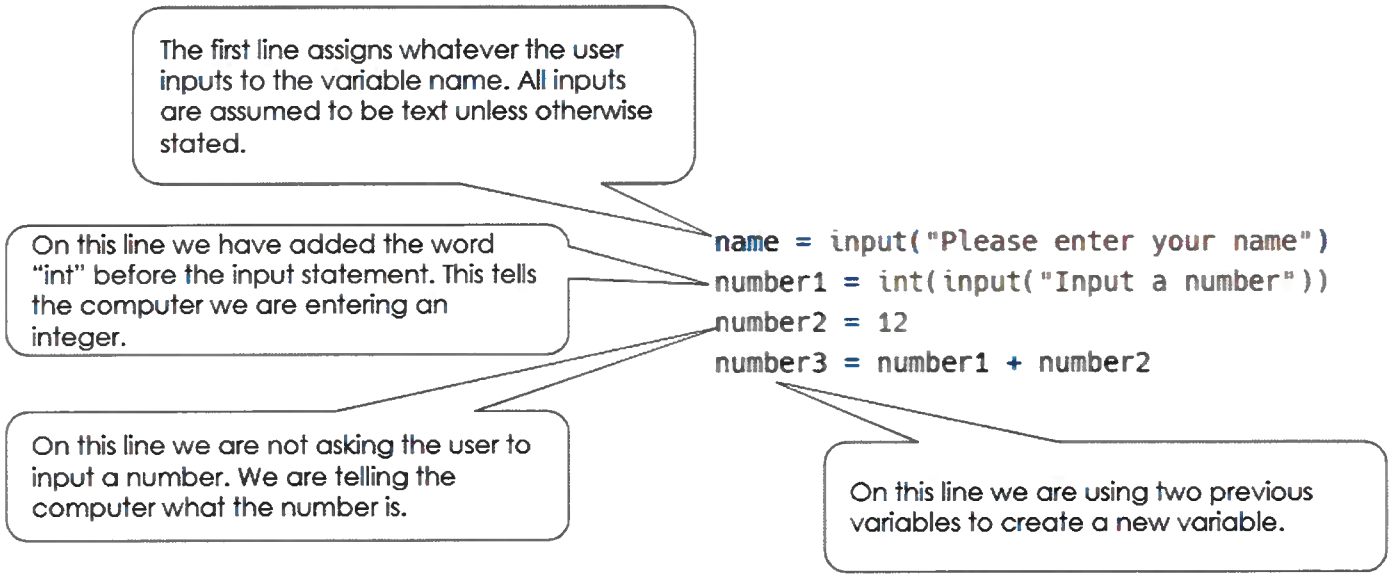
Program translation
A translator is a program that converts source code (python) into code that the computer can use.

Program execution
To execute/run a program is to run the program in the computer,

Interpreter
A computer program that directly executes instructions written in a programming language

Lesson 2

Describe the semantics/(meanings of words) of assignment statements



Use simple arithmetic expressions in assignment statements to calculate values

```
length = 4.5
width = 3.76
area = length * width
perimeter = length * 2 + width * 2
```

Receive input from the keyboard and convert it to a numerical value

See example for variable/ (number or thing that changes) **number2** above.

Programming environment/(surrounding conditions)

A program that contains language specific/clearly stated/particular editors and source level debugging/(finding and correcting mistakes in) facilities. (Replit.org)

Input

Data that is entered into or received by a computer

Output

The information that it displays on a screen or prints on paper as a result of a particular program.

Variables/(numbers that change/things that change)

A variable/(numbers that change/things that change) is a value that is stored by a computer.

Assignment

A statement in computer programming that is used to set a value to a variable.

Operators

An operator is a specific mathematical or logical action or process.

Expressions

A combination of values and functions that are combined to create a new value

Lesson 3

Lesson 3

Describe how to use binary selection to control the flow of program execution.

On the first two lines variables a and b are set to values 1 and 2.

On this line we are using an IF statement to check if a is equal to b using the double equals. (==)

If they are equal we set c = a.

If not then we set c = b.

```
a = 1
b = 2
if a == b:
  c = a
else:
  c = b
print(a,b,c)
```

Describe how to use random integers e.g.,

We need to tell the computer we are using a library of ocde called random

On these lines we are setting a and b to random numbers between 1 and 10.

If they are equal we set c = a.

If not then we set c = b.

```
import random
a = random.randint(1,10)
b = random.randint(1,10)
if a == b:
  c = a
else:
  c = b
print(a,b,c)
```

Integer and string type

Integer is a numeric/number-based value, while string is a character value represented in quotes.

Execution

To execute/ run a program is to run the program in the computer

Selection

Where a section of code is run only if a condition is met

Relational operators

Relational operators compare numeric/number-based, character string, or logical data. The result of the comparison, either true (1) or false (0). Examples include =, > < and <>.

Logical (or Boolean) expressions

An operation involving the use of logical functions, such as AND or OR.

Conditions

Conditions are statements which evaluate/(figure out the worth, amount, or quality of) if something is true or false.

Multi-branch selection

Where the flow of a program can go in many different directions depending on a particular value.

		Iteration/Cycle A sequence of instructions or code being repeated until a specific end result is achieved/(accomplished or gained with effort). **Flags** A flag is a variable(number or thing that changes) that acts as a signal within a program.

Lesson 4

Explain how multi-branch selection (if, elif, else statements) can be used to control the flow of program execution.

We need to tell the computer we are using a library of ocde called random

On these lines we are setting a to a random numbers between 1 and 10.

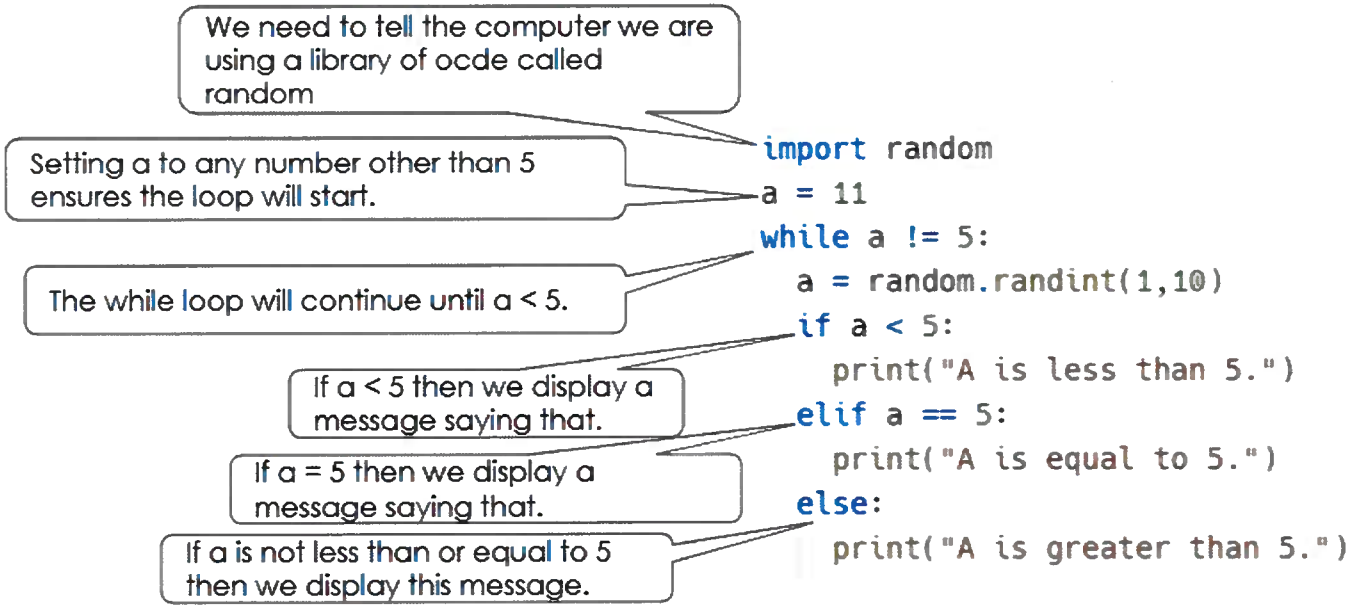
If a < 5 then we display a message saying that.

If a = 5 then we display a message saying that.

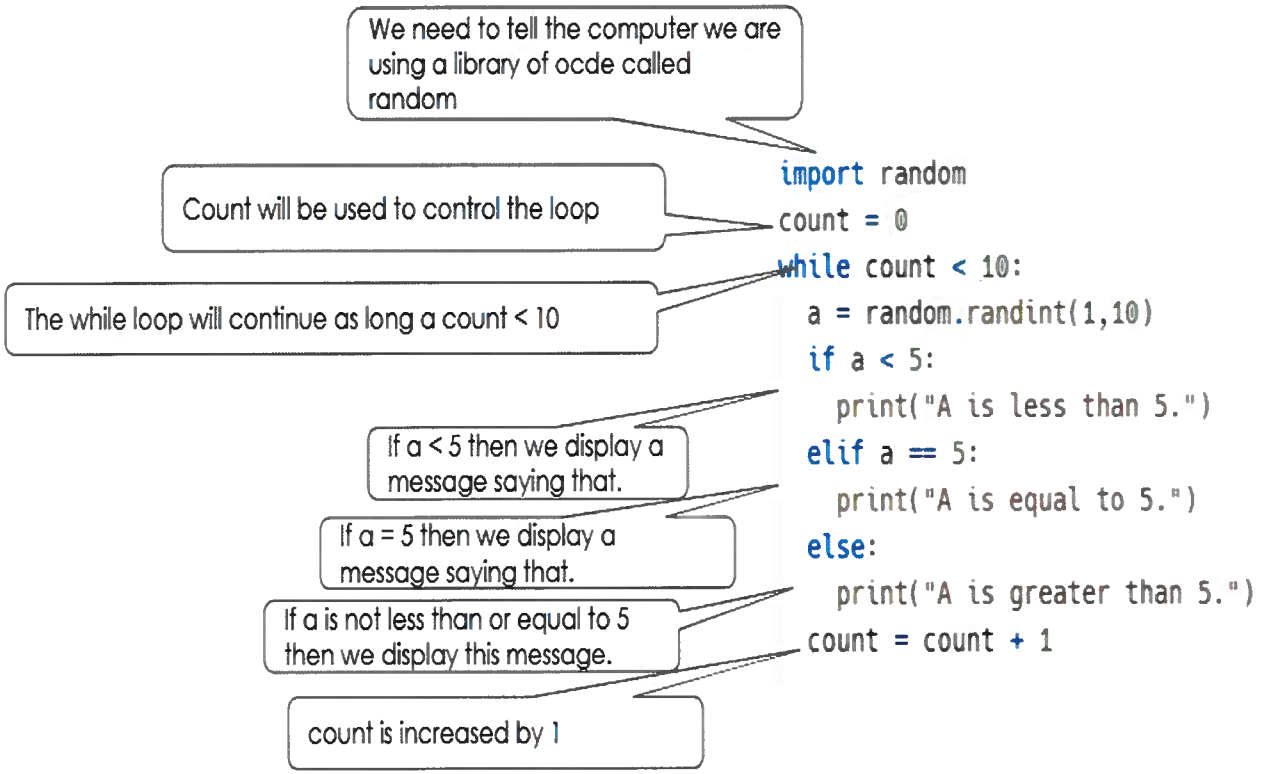
If a is not less than or equal to 5 then we display this message.

```
import random
a = random.randint(1,10)
if a < 5:
  print("A is less than 5.")
elif a == 5:
  print("A is equal to 5.")
else:
  print("A is greater than 5.")
```

Explain how iteration/cycle (while statements) controls the flow of program execution



Lesson 5	**Use iteration/cycle (while loops) to control the flow of program execution** **Use variables/ (numbers that change/things that change) as counters in iterative/repeating/repetitive programs**



Lesson 6

Combine iteration/cycle and selection to control the flow of program execution

Use Boolean variables/(numbers that change/things that change) as flags

We need to tell the computer we are using a library of ocde called random

loop controls the while loop and is set to **True**

The while loop will continue as long a loop = True

If a < 5 then we display a message saying that.

If a = 5 then we display a message saying that. We then set loop to False to stop the loop.

If a is not less than or equal to 5 then we display this message.

```
import random
loop = True
while loop == True:
    a = random.randint(1,10)
    if a < 5:
        print("A is less than 5.")
    elif a == 5:
        print("A is equal to 5.")
        loop = False
    else:
        print("A is greater than 5.")
```

Lesson 7	**Perform common operations on lists or individual items**

```
1   fruit = ["apple","banana","pear","pineapple"]
2   print("The first fruit in the list =",fruit[0])
3   print("The second fruit in the list =",fruit[1])
4   fruit.append("cherry")
5   fruit.insert(1,"grape")
6   fruit.pop(3)
7   fruit.remove("apple")
8   fruit.sort()
9   print(fruit)
```

Lesson 8	**Use iteration (for statements) to iterate over list items**

```
1   print("Enter the first piece of text: ")
2   text1 = input()
3   for i in range(0,len(text1)-1):
4     print(text1[i])
```

```
1   print("Enter the times table you wish to see: ")
2   timesTable = int(input())
3   for i in range(1,13):
4     print(i,"*",timesTable,"=",timesTable*i)
```

PCSHE – Year 9 Term 2 and 3 – The Justice System

Key Terms

- **Law:** a system of rules which a country uses to regulate the behaviour of its citizens.
- **Civil Law**: When there is a dispute between two people and is usually a personal matter, rather than a crime. E.g. divorce
- **Criminal Law**: When someone breaks a law. E.g. stealing
- **Barrister**: A type of lawyer that defends the person charged with a crime in court.
- **Jury**: is made up of 12 adults, who sit in a crown court and decide whether the accused person is innocent or guilty.
- **Judges**: a person who is in charge of a trial in a court and decide how a guilty person should be punished.
- **Magistrate's Court**: All trials starts in a Magistrate's court. A Magistrate can give out sentences but don't have the same power as a Judge so they only rule over minor offenses. More serious crimes get referred to a Crown court, in front of a Judge.
- **The Crown Prosecution Service**: They advise the police on whether they have enough evidence to prosecute someone. They prepare cases for the court and can decide what charge they think the accused should receive.
- **Probation Officer**: they supervise offenders in the community when they've been released from prison.
- **Bail**: an amount of money that a person who has been accused of a crime pays so that they can be released until their trial.
- **Custody**: being kept in prison, while waiting to go to court for trial.
- **Caution**: a spoken warning given by the police to someone who has broken the law
- **Reoffend**: To offend again
- **Joint Enterprise**: If a persons' presence, actions or knowledge lead to a murder or assault then they can be charged even if they didn't directly do anything.

KPI1: Introduction to Laws

Our law comes from legislation (laws passed by parliament) Common law and EU law. England and Wales have the same legal system; Northern Ireland has a very similar system. Scotland has its own system of laws

Types of Law:

- Criminal law: A specific crime has been committed. Case between an offender and the government (acting for all citizens) These cases will go through the criminal justice system and could lead to a custodial sentence. Range in severity, not all 'serious' An Act of Parliament has been broken.
- Civil law: Disputes between individuals or group. Often linked to rights e.g. company law, adoption, consumer rights. A claimant can bring a case to civil court, normally to claim damages (to sue for money) Can still be 'serious' and involve very emotive issues.

Legal responsibilities:

- Many people in the UK take a role in the running of the legal system. You still have rights, even if you are an offender Citizens can be on a jury (compulsory) train to be a magistrate (to hear cases in courts in their community), become a special constable (trained volunteers who support police) or advise in a tribunal (as an expert) These roles offer great support to justice within the community.
- If you are arrested you must be told the reason for the arrest, can tell someone, able to get legal aid, offered medical help if needed, provided with a written notice about your rights and offered an interpreter. Human Rights must also be followed in prison (within reason e.g. liberty, democracy.

KPI2: Types of Court:

Criminal Courts

- Magistrates court: 95% of cases, less serious crimes e.g. theft. Led by trained magistrates, no jury can only give minimal penalties.
- Crown court: Serious cases e.g. murder. Led by judge, formal, jury decides on guilt.

Courts must consider mitigating factors. The Crown prosecution Service (CPS) advises the police on cases for possible prosecution. It reviews cases submitted by the police for prosecution and decides the charge in very serious or complex cases.

Civil Courts:

- A dispute between two individuals or groups that requires legal advice.
- Disputes can be solved in civil courts, but also via tribunals (less formal courts).
- Ombudsmen (expert decision makers)
- Mediation (talking it through) these are often cheaper and quicker.
- Tribunals produce rulings that are legally binding; an expert judge takes the lead.
- Ombudsmen are independent and free of charge but can be slow. Mediation can lead to a legally binding agreement.

Youth Justice System:

- The part of the justice system that deals with young people (10- 17) The youth justice system aims to prevent youth crime.
- The UK recognise that YP who break the law should be treated differently.
- Sentences will often focus on rehabilitation.
- YP must have an appropriate adult with them before they are questioned.
- Youth Offending Teams will work with YP to support and educate.
- Youth courts (less formal) are used but very serious crimes can be passed to a crown court.

Office for national statistics:

- The organisation that collects data about what is happening in the UK (including crime).
- Most YP who commit crime have low literacy or difficult backgrounds. Rates of reoffending are high (especially with YP) Violent crime has fallen over the last 20 years
- There is a growing view that prisons need to focus more on rehabilitating prisoners.
- Questions what government are doing to address the root causes of crime (literacy, poor home life)
- Crime statistics can be misleading as certain crimes (e.g. rape) may be underreported

PCSHE – Year 9 Term 4 – Respectful and Intimate Relationships

KPI1: Key definitions:

- **Healthy Relationships:** Healthy relationships involve honesty, trust, respect and open communication between partners, and they take effort and compromise from both people. There is no imbalance of power.
- **Unhealthy Relationships:** An unhealthy relationship can be defined as one that is characterised by an ongoing pattern of behavior, such as lack of communication, power imbalances, lack of mutual respect, lack of boundaries, physical abuse, verbal abuse, emotional abuse, etc.
- **Marriage**: a legally accepted relationship between two people in which they lived together, or the official ceremony.
- **Cohabitation**: another way of saying a couple are living together.
- **Civil partnership:** A civil partnership is a legal relationship which can be registered by two people who aren't related to each other. They are available to both same sex couples and opposite sex couples.
- **Sexual consent**: The giving of permission by a person to engage in any form of sexual activity.
- **Affirmative consent**: Consent is only given when a person agrees verbally to engage in sexual activities.
- **Coercion**: The action or practice of persuading someone to do something they wouldn't normally do or something they don't want to do by using force or threats.
- **A person who is minor**: A person who is under the age of 18 and legally considered a child.
- **Contraception**: Methods that are used to prevent pregnancy from occurring during sexual activity.
- **Hormonal methods**: Contraceptive methods with the use of hormones to prevent pregnancy, usually used by women only.
- **Barrier methods**: contraceptive methods which prevent pregnancy by stopping the sperm from reaching the egg.
- **Combination methods**: Contraceptive methods which use both hormonal and barrier methods to prevent pregnancy.
- **Natural Methods**: contraceptive methods which do not use hormones or barriers, mostly focused on fertility awareness.
- **Pornography**: Printed or visual material containing the explicit description or display of sexual organs or activity, intended to stimulate sexual excitement.
- **Soft Porn**: Films, magazines, photographs etc. that show sexual images such as nudity but not sexual act.
- **Hardcore Porn**: Films, magazines, photographs etc. that shows sex in a very detailed way, or shows very violent or unpleasant sex.
- **Child Pornography**: Sexually explicit material depicting anyone under the age of 18.
- **Revenge P**orn: Revealing or sexually explicit images or videos of a person posted on the Internet, typically by a former sexual partner, without the consent of the subject and in order to cause them distress or embarrassment.
- **Sexting**: Sending sexually explicit messages or pictures via mobile phones, instant messaging or email.

KP2: Healthy and Unhealthy Relationships

Healthy Relationships	Unhealthy Relationships
- You know when you're in a healthy relationship because you feel happy to see and spend time with certain people - they could be members of your family, your friends, your work mates or even a romantic partner. - No relationship is ever perfect, and you will have moments when mine disagreements will rise to the surface causing frustrations with others - there are many factors that contribute to the development and maintenance of have your relationships including commitment, trust, respect and responsibility, **What is needed to keep a relationship strong?** - Building a relationship on friendship and being a good team. - Being realistic in your expectations and putting in effort. - Communicating well - Talking constructively about any issues when they first arise so that bigger problems don't develop. - Having good support networks - Having friends and family around you to help when life is tough.	The signs of an unhealthy relationship are easy to spot. • People stop communicating, become less close, argument frequently and show less love and respect for each other. • There are many reasons that a relationship might breakdown. Often it has to do with the personalities, attitudes and behaviours of the individual. Other causes come from outside the relationship. There are many ways to deal with or improve an unhealthy relationship – we could try listening more to others and become more aware of their needs. We could examine our own behaviour honestly and try to identify aspects of it which is causing conflict with others. However, the best way to improve an unhealthy relationship between partners is by getting advice.

KPI3: Relationships, marriage and family

- **Marriage**: a legally accepted relationship between two people in which they lived together, or the official ceremony.
- **Cohabitation**: another way of saying a couple are living together. This can be formalised with a legal agreement called a cohabitation contract. This outlines the rights and obligations of each partner towards each other e.g. About how you share your property.
- **Civil partnership:** A civil partnership is a legal relationship which can be registered by two people who aren't related to each other. They are available to both same sex couples and opposite sex couples. Registering the civil partnership will give you relationship legal recognition. This will give you legal rights, as well as responsibilities.

Attitudes towards marriage/civil partnerships

Why might people choose a marriage/civil partnership?

- To make a lifelong commitment
- *Love*
- *Societal expectations*
- *Family expectations*

Why might people choose not to marry/form a civil partnership?

- *Independence*
- *Divorce rates*
- *Potential cost*
- *Religious connotations*

PCSHE – Year 9 Term 4 – Respectful and Intimate Relationships

KPI4: On-Screen Relationships

Why aren't there many examples of healthy and realistic relationships in TV, film and online?

- Romantic relationships in the media tend to be over dramatised to make them interesting and more exciting to watch
- They are often a relationship has to be portrayed in a very short amount of time, so things move very quickly
- People on reality TV possibly have other motives and will act differently because they know they're being watched
- Casting can often be limited
- There are limits to what can be shown on TV and film
- They're usually designed for entertainment rather than to provide a public health message or education.

What impact might this have on how young people think about their own relationships?

- It may cause inaccurate expectations about how quickly relationships should develop
- It may lead to people accepting arguments/breakups as a typical part of relationships
- It could possibly desensitise to issues such as cheating
- It could lead to lowered self-esteem and concerns about body image compared to celebrity culture
- It may lead to individuals believing they are only worthwhile if in a relationship
- There are very few models of what healthy relationships look like.

Who are these representations of relationships appropriate for?

Film, DVD and online classifications can help identify what viewing is appropriate for your age range. Some films, TV programmes shown after 9:00 PM, or online content aimed at older viewers are more likely to have more graphic representations of relationships and may focus on 'grittier' storylines which represent unhealthy relationships.

KPI5: Types of Contraception

Birth control	What is it?	How to use	Prescription Needed	Protects against STIs
Oral Contraceptive	Most contraceptive pills stop ovulation by preventing the ovaries from releasing an egg each month. Oral contraception needs to be taken around the same time each day.	Take one pill every day as directed	Yes	No
Injection	Each injection is more than 99% effective at preventing pregnancy. This method stops ovulation and makes the fluid at the opening to the uterus (womb) thicker, stopping sperm from getting through. The injection lasts 12-14 weeks.	Get injections every three months	Yes, injection given in health care providers office	No
Female condom	It is a loose non-latex pouch with a flexible ring at each end that sits in the vagina, to stop sperm from getting into the uterus.	Insert every time before sex	No	Yes
Male condom	It is a is a strong latex (rubber) pouch that is put over the erect penis to stop sperm from getting into the vagina.	Partner must wear every time during sex	No	Yes

KPI6: What is consent?

Consent is:

1. Freely given. It's not okay to pressure, trick, or threaten someone into saying yes.
2. Reversible. It's okay to say yes and then change your mind — at any time!
3. Informed. You can only consent to something if you have all the facts.
4. Enthusiastic. You should do stuff you WANT to do, not things people expect you to do. If someone doesn't seem enthusiastic stop and check in.
5. Specific. Saying yes to one thing (like going to the bedroom to make out) doesn't mean you're saying yes to other things (like having sex).

Consent cannot be given when:

1. When a person is drunk or high, to the point that they are unable to speak or look after themselves.
2. Asleep or Passed Out – if they are not conscious, they are unable to agree to any sexual activity. If someone passes out whilst engaging in sexual activity – STOP!
3. They are Underage – Legally a person under the age of 16 cannot give consent to any sexual activity.
4. Mental disability or learning difficulties which mean they are unable to fully understand what they are consenting to.

PKI6: Pornography

Pornography Laws in the UK:

- The legal age to buy/access pornographic material is 18, be this magazine, DVD's or internet access.
- It is legal to watch pornography in the UK as long as it doesn't feature under 18's, sex with animals, torture, scenes of rape or sexual assault, scenes which are violent to the point of life threatening or likely to cause serious harm.
- Under 18's who film or take sexual pictures of themselves or others can be charged with child pornography offences which can lead to prison sentences of up to 10 years. Even if all involved agreed.
- It is illegal to watch pornography with an under 18, this is considered a form of abuse.
- It is illegal to make and/or distribute pornographic photographs or films without all participants knowledge and consent. This can lead to up to 2 years in prison.

Ways in which pornography can distort views of relationships and sex include...

- Sex ends when the man ejaculates and orgasms.
- Women orgasm every time they have sex.
- People use insults and abusive language when having sex.
- Everyone wants to have sex all the time.
- Sex is an aggressive act of dominance of one partner over another.
- Women are portrayed as bored and sexually frustrated.
- People want to have sex with more than one person at a time.
- External ejaculation is expected and common.
- Anal Sex is common and popular amongst heterosexual couples.
- Sex is good every time.
- Penises are large (over 6inches)
- Sex is all about what men want and men are in control.
- Women are expected to dress up and wear make up for sex.
- Sex is loud.
- Consent to sex means all sex acts.
- You must look and dress a certain way to be considered sexy