Year 9

Knowledge Organiser
May- July 2025

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.

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Year 9 English KO Rhetoric and Revolution Speech Writing

Persuasive techniques/ rhetorical devices:

- Repetition
- Tripling
- Anaphora
- Epistophe
- Provocative statements
- Emphatic/ exclamatory statements
- Personal pronouns
- Collective pronouns
- Direct address
- Call to action
- Hyperbole (exaggeration)
- Emotive language
- Rhetorical questions
- Statistics
- Facts
- Anecdotal evidence
- Expert opinion
- Ethos
- Pathos
- Logos

Non-fiction extended writing success checklist (Language Paper 2 Q5)

- Varied ambitious vocabulary
- Range of paragraph lengths for effect
- Appropriate genre conventions
- Suitable purpose, audience and form.
- Developed and focused points
- Use of language and structural techniques
- Accurate SPAG
- Control range of punctuation

Useful discourse markers (to link clauses, sentences and paragraphs).

Meanwhile
Above all
Significantly
Equally
For instance
Consequently
Thus
Alternatively
Moreover
Likewise
Similarly
Therefore
Such as
Ultimately
In addition
In contrast
Conversely,
Contrary to,
Despite this,
Nonetheless,
However,
This proves that
Clearly
Correspondingly

Sentence Starters for non-fiction writing

Experts have claimed...
After some consideration...
The evidence overwhelmingly suggests that...
Another essential point...
Whilst this is the case...
The traditional interpretation is...
Most importantly...
There is limited evidence for...
These factors contribute to...
Studies have shown...
It has become increasingly clear that...
Common sense dictates that...
Indeed, the best solution would be...

Non fiction Genre Conventions

Speech:
Directly addresses the audience with use of **personal pronouns** . It may start 'ladies and gentlemen' or similar. Aim for contrast – move from light-hearted to serious, problem to solution, question to answer.

Magazine Article:
Needs a **headline** and may use **sub-headings.** Likely to be 'lively', so make sure language choices are entertaining and descriptive. Think carefully about the intended audience. May include direct speech/quotes from interviews.

Report:
Needs a **header** to explain what the report is about and who it is written for. Must make use of **sub-headings.** First will be the rationale – why the report has been written. **Next is the current situation/issues and then finally the recommendations;** use a **formal tone.**

Review:
Make use of the **language of evaluation** in review writing. You need to explain what you thought of the very aspects of the 'thing' you are reviewing and *make recommendations* on who would be most likely to enjoy the use of the product. Reviewers are often **witty and descriptive with use of hyperbole.**

Blog:
Blogs tend to be **quite formal but it depends on the audience.** The blogger gives their views/ideas on a topic of their choice. They will often support their ideas with **references to other 'experts'**, to give more authority to what they write.

Key vocabulary

Colloquial
Language used in ordinary and familiar conversations; informal expression, dialogue and tone.

Concise
Giving a lot of information clearly and in a few words (to the point).

Courteous
Polite and respectful (well-mannered).

Provision
Providing or supplying something. (to give)

Reiterate
To say something a number of times; to repeat, emphasise.

Elaborate
To develop or present something in further detail.

Proposal
A plan, suggestion or recommendation.

Inadequate
Not good enough; substandard, insufficient.

Negligible
Small and unimportant.

Recipient - Someone who receives something (from the sender).

Likely **audiences:** Headteacher, editor of a paper, peers, other teenagers, Prime Minister, Local authority/ council and parents.

Purpose - why
Audience - who
Form - what (type of writing)

Year 9 Term 3 Rhetoric and Revolution Knowledge Organiser

Key speeches.

Race and Nation

William Wilberforce: a key abolitionist who was instrumental in the abolition of slavery. An MP in England, he successfully lobbied parliament and the laws surrounding the legality of slavery were overturned in 1833.

Frederick Douglass: a USA abolitionist who fled for slavery in the Southern States of America and campaigned in the North for the abolition of slavery.

Winston Churchill: Conservative Prime Minister for the UK for the duration of World War 2

Elizabeth 1: Tudor monarch who successfully ensured the defence of England and the realm for the Spanish Armada in 1588

Gender rights

Emmeline Pankhurst: Suffragette who campaigned for the right for votes for women in 1918

Emma Watson: 21st century actress who advocates for gender equality in society.

Martin Luther King: Black American Baptist minister and prominent member of the civil rights movement which took place in America in the 1960s.

Malcolm : Black Civil rights movement leader who advocated for black rights by 'any means necessary.' His pursuit of black empowerment was at odds with non-violent teaching of Martin Luther King.

Environment

Greta Thunberg: 21st century environmentalist whose one girl protest when viral on the internet in 2018 and inspired a new generation to fight for green issues.

David Attenborough; 20th and 21st century broadcaster who is widely respected due to his numerous TV series which document the effect of mankind on the planet and hugely influential in environmental matters.

Key vocabulary:

Race and nation

- Abolition: the ending of something (The abolition of slavery is what Wilberforce and Douglass campaigned for.)
- Colonialism: the act of acquiring full or partial political control over a country and exploiting it economically. This includes the natural resources of a country and may also include the exploitation or citizens of that country.
- Slavery: the forced labour of someone without consent and proper payment.
- Exploitation: the act of taking advantage of someone unfairly.
- Pacifist: someone who seeks change through peaceful means.

Gender

- Equality: ensuring that all individuals are treated equally and without discrimination due to gender.
- Equal Opportunities Act protected characteristics: the thing which are illegal to discriminate against. It is illegal to discriminate against somebody based on age, disability, gender reassignment, marriage and civil partnership, pregnancy and maternity, race, religion or belief, gender and sexual orientation.

Environment

- Activist: a person who campaigns to bring about political or social change.
- Environmentalist: somebody who promotes the importance of 'green issues' over capitalism and seeks to change policies and public thinking.
- Global Warming: a gradual increase in the temperature of the earth's atmosphere, generally attributed to the greenhouse effect.
- The Green House Effect: global warming caused by increased levels of carbon dioxide, CFCs and other pollutants.
- Environmental issues: those issues which affect the environment and are a result of man's actions rather than the act of natural disaster. These include pollution, overpopulation, waste disposal, climate change (see global warming.)

Y9 Summer Knowledge Organiser Search sparx codes in KS3 if starting with M and GCSE if starting with U at sparxmaths.uk/student/independentlearning

Plotting and interpreting quadratic graphs

Topics

- Plotting graphs of quadratic functions (U989)
- Interpreting graphs of quadratic functions (U667)
- Solving quadratic equations graphically (U601)

Building Blocks

- Substituting into algebraic formulae(U585)
- Plotting straight line graphs(U741)

Keywords

Intersection - crossing point of a graph and another graph or axis.
Turning point - Minimum or maximum of the graph
Roots - intersections of the quadratic graph and the x-axis.

Angles

Topics

- Combining angle facts(U655)
- Angles on parallel lines(U826)
- Using quadrilateral properties to find angles(U329)
- Angles in polygons(U427)

Building Blocks

- Angles on a line and about a point(U390)
- Vertically opposite angles(U730)
- Angles in triangles(U628)
- Angles in quadrilaterals(U732)
- Line and shape properties(U121)

Keywords

Alternate angles - angles that occur on opposite sides of the transversal line and have the same size.
Corresponding angles - angles that occur on the same side of the transversal line and are equal in size.
Co-interior angles - angles that occur on the same side of the transversal always add up to 180 degrees.
Regular - all sides and angles are equal.
Exterior angle - angle between the side in a polygon and an extended neighbouring side, they all add to 180°.

Bearings

Topics

- Measuring and drawing bearings(U525)
- Calculating bearings(U107)

Building Blocks

- Understanding, measuring and drawing angles(U447)
- Combining angle facts(U665)
- Angles on parallel lines(U826)

Keywords

Bearing - an angle measured clockwise, from the Northline given to 3 digits.

Y9 Summer Knowledge Organiser Search sparx codes in KS3 if starting with M and GCSE if starting with U at sparxmaths.uk/student/independentlearning

Transformations

Topics

- Translation(U196)
- Reflection(U799)
- Rotation(U696)
- Enlargement by a positive scale factor(U519)
- Mixed transformations(M88

Building Blocks

- Translation(M139)
- Reflection(M290)

Keywords

Translation - shifting of a shape by a vector.
Reflection - flipping of a shape in a mirror line or axis.
Rotation - turning of a shape around a centre of rotation in a direction by 90/180/270 or 360°.
Origin - point (0,0).
Enlargement - changing the size and/or position of a shape by a scale factor and a centre of enlargement.

Similarity

Topics

- Understanding similarity(U551)
- Finding unknown sides in similar shapes(U578)

Building Blocks

- Solving direct proportion word problems(U721)

Keywords

Scale factor - a number or fraction we multiply by to show the relation between sides in a shape.
Similarity - shapes that have the same shape, this means equal angles and sides that are in relation to each other given the scale factor.

Congruence

Topics

- Understanding congruence(U790)
- Congruent triangles(U866)
- Constructing triangles(U187)

Keywords

Congruence - Shapes that are identical to each other. They have the same angles and side lengths.

Y9 Summer Knowledge Organiser Search sparx codes in KS3 if starting with M and GCSE if starting with U at sparxmaths.uk/student/independentlearning

COllecting and presenting data

Topics

- Types of data(U322)
- Presenting data and making conclusions(U571)
- Comparing populations using diagrams(U520)
- Choosing suitable averages and solving problems(U717)

Building Blocks

- Averages and range(U526, U456, U260, U291)
- Interpreting graphs and charts(U557, U193, U172, U909)

Keywords

Continuous data - can take any value within a range, you can measure it, e.g. time in a race, weight, lengths.
Discrete data - can only take certain values, is countable, can be a category, e.g. shoe size.

Scatter graphs

Topics

- Plotting scatter graphs(U199)
- Interpreting scatter graphs(U277)
- Using lines of best fit(U128)

Building Blocks

- Reading and plotting coordinates(U789)
- Finding equations of straight line graphs(U315)

Keywords

Scatter graphs - points that show the relationship between two sets of data.
Line of best fit - a straight line that represents the plotted data in a scatter graph best.
Positive correlation - two sets of data are strongly linked together, 1 is a perfect positive correlation.
No correlation - values of two sets of data do not link at all, 0 is no correlation.
Negative correlation - two sets of data are oppositely linked together (as one increases the other decreases), -1 is the perfect negative correlation.

Grouped data

Topics

- Interpreting frequency tables with grouped data(U312)
- Finding averages from grouped data(U877)
- Drawing and interpreting frequency polygons(U840)

Building Blocks

- Interpreting frequency tables and two-way tables(U981)
- Finding averages from frequency tables(U569)

Keywords

Midpoint of a group - middle value of an inequality, add the lowest and highest value and then divide by two.
Estimated Mean - use the midpoints of each group before multiplying by the frequencies.
Median and modal group - group in table that consists the median or mode.
Frequency polygon - A graph made by joining the middle-top points of the columns of a bar chart.

Column vectors

Topics

- Understanding column vectors(U632)
- Adding and subtracting column vectors(U903)
- Multiplying column vectors by a scalar(U564)
- Identifying parallel vectors(U660)

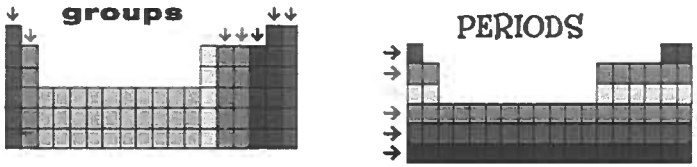
Keywords

Vertical - going up or down.
Horizontal - going left or right.
Vector - line that is defined by its length and direction, you write it in lower case letters and underline it.
Scalar - a number, when using it in vector multiplications each number in the vector must be multiplied by the scalar.
Parallel vectors - one vector is parallel to another if they are scalar multiples of each other.

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

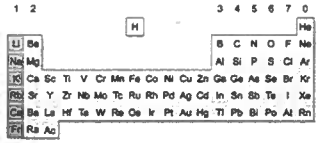
- Early versions of the periodic table elements were ordered by their **atomic weight**, so some atoms were placed in the wrong group where their properties didn't match other elements in that group.
- The first successful periodic table was created by Dimitri **Mendeleev**. He did two things differently:

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

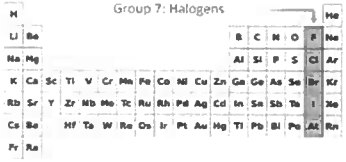
- **Chemical properties** – Form ionic compounds in reactions with non-metals and form ions with a '+1' charge.
- React vigorously with water to produce hydrogen gas.

  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

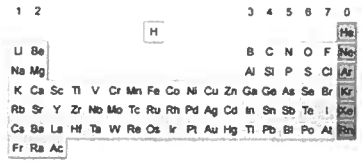


- Non-metals with **coloured vapours.**
- Diatomic - Atoms exist in pairs.

  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.

P6

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.

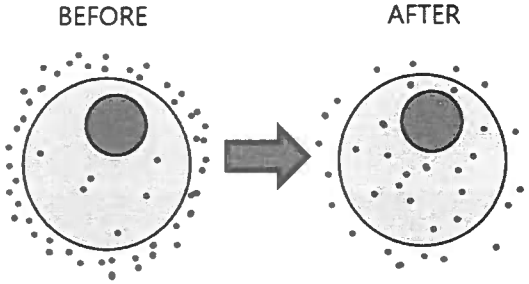
Energy resource	*How it works to generate electricity*	Uses	Positive	Negative
Fossil Fuels (coal, oil and natural gas)	Burnt to release thermal energy used to turn water into steam to turn turbines	Generate electricity, heating and transport	Cheap to extract and reliable	Non-renewable. Burning fossil 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.

Year 9 Biology Knowledge Organiser Cell Biology 2 - Exchange and Transport

Box 1 – Exchange and Transport

All organisms **exchange** substances with their environment to stay alive. This means they must **transport useful substances into cells and waste substances out of cells.**

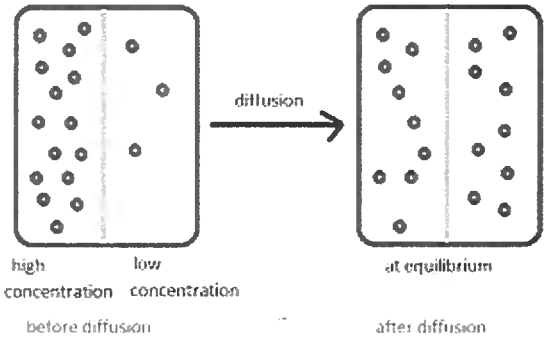
Substances can be transported into or out of cells by: **diffusion, osmosis** or **active transport.**



Box 2 – Diffusion

Diffusion is the spreading out of particles from an area of higher concentration to an area of lower concentration.

The random motion of particles in liquids and gases means that particles will spread out until the concentration is equal throughout. Overall, the **net movement** of the substance will be from higher to lower concentration.



The <u>rate</u> of diffusion is affected by:

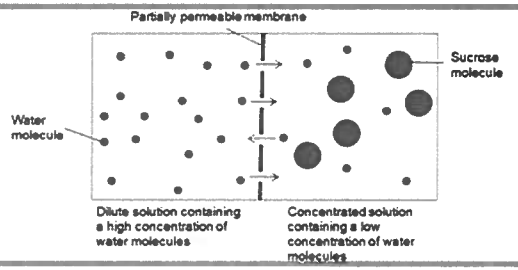
- the **concentration gradient** (the difference in concentration between two places)– the bigger the difference in concentration, the faster diffusion is.
- the **temperature** (a higher temperature increases the rate of diffusion as particles have more energy in their kinetic stores)
- The **surface area** of the membrane (a larger surface area of cell membrane increases the rate of diffusion into/out of a cell).

Diffusion is the process the transports oxygen into the bloodstream and into cells, and transports carbon dioxide out (in the lungs, or gills of fish). It is also how the waste product **urea** moves from cells into the bloodstream, before removal in urine.

Box 3 – Osmosis

Osmosis is the **movement of water** from **a more dilute solution to a more concentrated solution across a <u>partially permeable membrane.</u>**

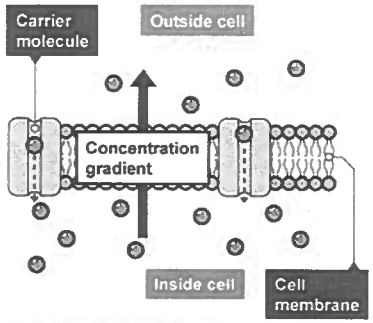
Osmosis stops once the solution concentration is equal either side of the partially permeable membrane.



Key Terms	Definitions
diffusion	The spreading out of particles from an area of higher concentration to an area of lower concentration.
concentration gradient	The difference in concentration of a substance between two places. A 'steeper' concentration gradient means there is a bigger difference in concentration and diffusion happens faster.
osmosis	Osmosis only describes the movement of water. It is the movement of **water molecules** from a dilute solution to a more concentrated solution across a partially permeable membrane.
partially permeable membrane	A membrane that only allows some substances through – others are prevented from travelling through. (e.g. a cell membrane). Small molecules pass through easily.
active transport	The movement of substances **against** the concentration gradient – from <u>lower to higher</u> concentration. This requires energy from respiration.

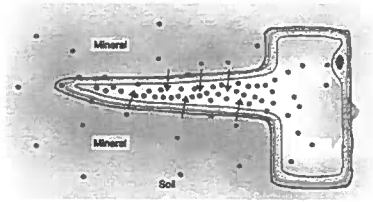
Box 4 – Active transport

Active transport is the movement of substances from **a lower concentration to a higher concentration and requires energy from respiration.**



Active transport happens in:

- **Root hair cells** to allow the cells to absorb mineral ions (like magnesium ions and nitrate ions) from the very dilute solution in the soil. They need ions like these for healthy growth.



- The **cells in the small intestine** to allow them to absorb all of the sugar (e.g. glucose) that is in the intestine. The sugar is needed by all cells in the body for respiration.

Cells that are carrying out active transport have a lot of mitochondria.

Year 9 Biology Knowledge Organiser Cell Biology 2 - Exchange and Transport

Box 5 – Adaptations for efficient exchange and transport

Unicellular organisms have a very large surface area to volume ratio (SA:V ratio) compared to multicellular organisms. They are small enough that diffusion straight into their cells is enough to meet their needs.

As multicellular organisms increase in size, their SA:V ratio decreases. They need organs with specialised exchange surfaces with a high SA:V ratio.

Without exchange surfaces (eg lungs, gills, leaves), multicellular organisms wouldn't be able to obtain enough of the substances they need to survive, or be able to get rid of waste products efficiently.

Box 6 – Specialised exchange surfaces

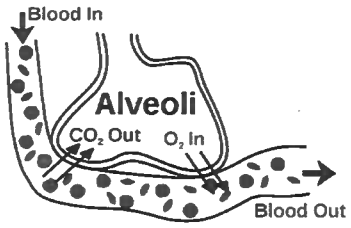
The following features make exchange surfaces effective:

- A **large surface area: volume** – to give a larger space for exchange
- Be **thin** (often just one cell thick) – for a short diffusion pathway
- Have an **excellent blood supply** (animals) – to maintain the concentration gradient
- Be **ventilated** (animals with lungs) – ventilation (breathing in and out) increases effectiveness by maintaining the concentration gradient with each breath.

Box 7a – Exchange surfaces and their adaptations in animals and plants

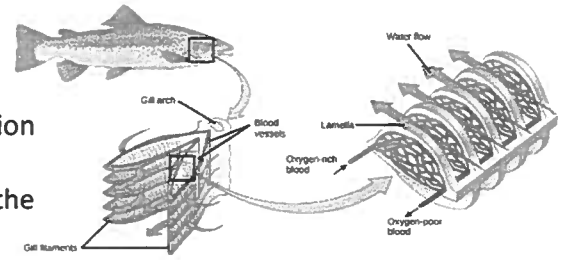
Alveoli (air sacs) in the lungs

- There are **millions of tiny alveoli**, giving a large surface area
- They are **one cell thick**, giving a short diffusion pathway
- They have an **excellent blood supply**, maintaining concentration gradient.
- They are **ventilated**, maintaining concentration gradient



Fish gills

- The **branching gill filaments**, giving a large surface area
- They are **one cell thick**, giving a short diffusion pathway
- They have **good blood supply,** maintaining the concentration gradient

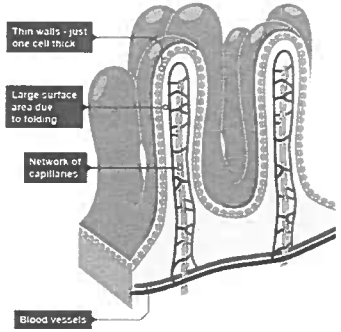


Key Terms	Definitions
surface area to volume (SA:V) ratio	Indicates how effective a surface is at exchange. A higher SA:V ratio is better. Generally, the smaller an organism is, the larger the surface area to volume ratio.
small intestine	The organ in the digestive system where products of digestion are absorbed into the bloodstream.
lungs	The organ where gas exchange takes place. Oxygen is absorbed from the air and carbon dioxide is transferred into the air. The air sacs where gases are actually exchanged are called **alveoli**.
gills	The organ in fish where gas exchange takes place. Oxygen is absorbed from the water into the blood, and carbon dioxide is transferred to the water.
leaves	The plant organ responsible for gas exchange. Carbon dioxide is absorbed from the air and oxygen and water is released into the air.
ventilation	Technical term for breathing in and out.

Box 7b – Exchange surfaces and their adaptations in animals and plants

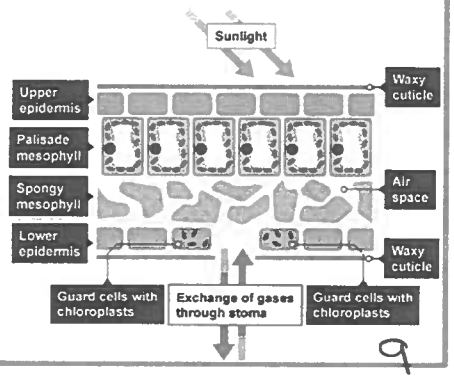
Small intestine

- The small intestine has **millions of villi,** giving a large surface area
- The surface of the villi is **one cell thick,** giving a short the diffusion pathway
- Every villus has a **good blood supply,** maintaining the concentration gradient.
- The outer cells of the villi are **packed with mitochondria** to provide the **energy** needed for **active transport**



Leaves

- **Flat and broad,** giving a large surface area
- **Air spaces** inside the leaf, giving a large surface area
- **Thin and flat,** shortens the diffusion pathway.



Year 9 Biology Knowledge Organiser – Organisation 1

Box 1 - Cells, tissues, organs and organ systems

Cells are the smallest units of life; all living things are made from cells. Cells are the basic building blocks of all living organisms.

Tissues are groups of similar cells working together to perform a particular function. The cells in tissues are usually specialised cells.

Organs are structures made of different types of tissue. The tissues within the organ work together to allow the organ to perform specific functions.

Organ systems are made of several organs that work together.

Multicellular organisms are living things that contain multiple organ systems working together to perform the functions of life.

Box 2 - The Digestive System

The digestive system is an **organ system**.

The food that is eaten passes through the digestive system and is gradually **digested** (broken down) and **absorbed** into the bloodstream. Each organ performs a different function on the food that passes through it.

The order food passes through the organs of the digestive system is:

Mouth – food enters the body and digestion starts. Chewing food increases the surface area of food so digestive enzymes break down food more quickly, and the digestive enzyme amylase in saliva breaks down the starch in food.

Oesophagus – carries food from the mouth to the stomach.

Stomach – contains hydrochloric acid and the digestive enzyme protease, the muscular walls of the stomach churn food to mix it with the acid and protease. The acid kills any bacteria present and the protease breaks down protein.

Small intestine – the main place food is broken down by digestive enzymes and absorbed into the bloodstream.

Large intestine – where water is absorbed from food.

Rectum/Anus – the remains of food is stored before being removed from the body as faeces.

Other organs that food does not pass through but are involved include:

Liver and **Gall bladder** – the liver makes bile and the gall bladder stores the bile until it is needed.

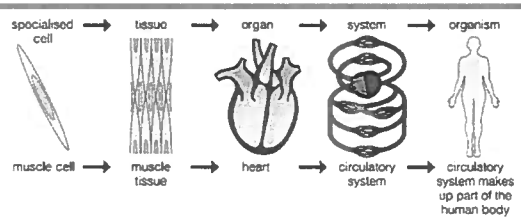
Pancreas – makes digestive enzymes that are used to break down food. The pancreas makes amylase, protease and lipase that break down food molecules in the small intestine.

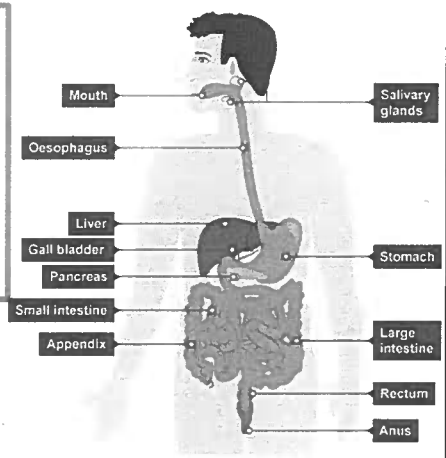
Box 3 - Digestion

The food we eat is mainly made of **starch** (a type of **carbohydrate**), **protein** and **fat**. These molecules are **too large to be absorbed**.

The digestive system (shown right) is where these large molecules are **broken down into smaller molecules** that can be **absorbed**.

Once absorbed, the smaller molecules are transported around the body in blood, to the cells that need them. The products of digestion are used by cells to make new molecules we need, and the **glucose** is broken down during respiration and releases energy.





Key Terms	Definitions
Digestion	Digestion is the process that takes place in the Digestive System. During digestion, large food molecules are broken down into smaller, soluble molecules. These smaller molecules can be absorbed.
Carbohydrate	Carbohydrates are a type of molecule used by all living things to **release energy**. There are two main types of carbohydrate: **starch** and **glucose**.
Starch	Starch is a large carbohydrate molecule. It is the main substance in bread, rice, pasta and potatoes – all foods in the food group "carbohydrates". Starch is made of many glucose molecules joined together. Starch is too large to be absorbed.
Glucose	Glucose is a small carbohydrate molecule; it is also known as a sugar. Sugars are molecules that are sweet and soluble. Glucose is small enough to be absorbed.
Protein	Protein is a large molecule found in meat, fish, dairy, and pulses and beans. It is used in the **growth of cells and repair of tissues** in the body. Protein is made of many amino acid molecules joined together. Proteins are too large to be absorbed.
Amino Acids	Amino acids are small molecules used to make proteins. The protein in food is made of amino acids; during digestion the protein is broken down to amino acids that are then absorbed, so our cells can then make use of them to make proteins of their own.
Fat	Fats are a type of molecule used by living things to **store energy**. Fats are found in meat, fish, dairy and oils (like vegetable oils). Fat molecules are too large to absorb without being broken down first. One fat molecule is made of one glycerol joined to three fatty acids.
Fatty acid and glycerol	Fatty acids and glycerol are small molecules that join together to make fat molecules. The fatty acids and glycerol that we absorb can be made into fat molecules inside cells or broken down to **release energy**.
Soluble	Soluble substances can dissolve in a solvent (a liquid, often water). Blood is mostly made of water, so substances need to be soluble to dissolve in blood for transportation around the body.
Digestive Enzymes	Digestive enzymes are molecules that work in the digestive system and break down large food molecules into smaller molecules that can be absorbed into the bloodstream.
Bile	Bile is made in the liver and stored in the gall bladder until it is needed. It is released into the small intestine as food arrives from the stomach and helps digestion in two ways: 1. It neutralises the acid from the stomach and provides the correct conditions for digestive enzymes to work. 2. It emulsifies fats into smaller fat droplets, which increases the surface area of fat to make it easier for lipase the break fat down.

Year 9 Biology Knowledge Organiser – Organisation 1

Box 4 - Enzymes and digestion

Enzymes are **biological catalysts** made of **protein**. They increase the rate of reactions. All organisms make many different types of enzyme to control the chemical reactions that take place inside cells (Topic link to **Metabolism**).

Enzymes in the digestive system increase the rate that large food molecules are broken down into smaller, soluble food molecules that can be absorbed.

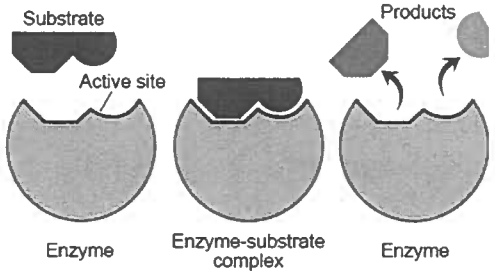
There are three main digestive enzymes to know about, see the table below:

Digestive enzyme	Place of production	Place of action	Substrate	Product
Amylase (also called carbohydrase)	Salivary glands (in the mouth), pancreas, small intestine	Mouth, small intestine	Starch	Glucose
Protease	Stomach, pancreas, small intestine	Stomach, small intestine	Proteins	Amino acids
Lipase	Pancreas, small intestine	Small intestine	Lipids	Glycerol and fatty acids

Place of production means where the enzyme is made.
Place of action means where the enzyme breaking down food.

Box 5 - Lock and Key Theory

Enzymes are highly **specific**, because of the unique shape of the **active site** of each type of enzyme: only one type of substrate molecule will fit into the active site of each enzyme.



The diagram above shows the **lock and key theory** of enzyme action:
The enzyme and substrate come together and the substrate fits into the active site. The enzyme and substrate form the enzyme substrate complex and a reaction occurs. The products that have been made are released. The enzyme is unchanged by the process and can break down another substrate molecule.

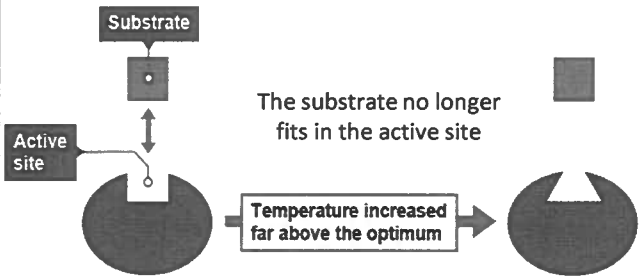
Box 6 - Factors that affect enzymes

Enzymes are affected by the temperature and pH of their environment. Each enzyme has conditions that are needed for them to work best – these conditions are called their **optimum** conditions.

If the conditions of an enzyme are not optimum the enzyme will work more slowly. If the conditions are too different to the optimum conditions the enzyme will **denature – which changes the shape of the active site.**

When an enzyme has denatured it no longer works at all.

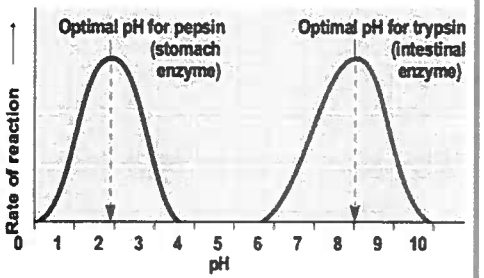
See the diagram below:



Key Terms	Definitions
Enzyme	Enzymes are protein molecules that act as biological catalysts. **Catalysts** increase the rate of chemical reactions.
Metabolism	All the chemical reactions that take place in the body, some absorb energy (endothermic) and some release energy (exothermic).
Specific	When referring to enzymes and **substrates**, specific means that each enzyme only works with one substrate, and each substrate is only broken down by one enzyme.
Substrate	The molecule an enzyme reacts with to make the **product**.
Product	The molecule made when a substrate is broken down by an enzyme.
Active site	The part of an enzyme where the substrate fits. The active site has a specific shape that is complementary to the substrate.
Complementary	When two things fit together, like the pieces of a jigsaw puzzle.
Optimum	The ideal or perfect condition for an enzyme. Enzymes are affected by temperature and pH.
Denature	This occurs when an enzyme is in conditions that are not optimal – the shape of the active site changes and will no longer fit the substrate.

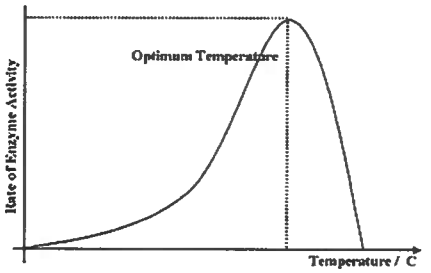
Box 7 The effect of pH

The enzyme from the stomach (acidic) works best in acidic conditions - pH 2 is the optimum. The one from the intestine (alkaline) works best in alkaline conditions - pH 8 is the optimum. The graph shows that the rate of activity decreases quickly when the conditions change from the optimum – the enzyme is **denatured**.



Box 8 The effect of temperature

The rate of reaction increases as the temperature increases until the optimum temperature is reached – here the enzyme works at the highest possible rate. If the temperature is too high (for most enzymes, above about 45°C), the enzyme **denatures**.



Year 9 Biology Knowledge Organiser – Organisation 1

Box 9 – Required practical: food tests

Aim: To use **qualitative** reagents to test for a range of carbohydrates, lipids and proteins. To include: Benedict's test for sugars, Iodine test for starch, the emulsion test for lipids and the Biuret reagent for protein

A **qualitative** test indicates if a substance is present or absent in a sample - but it doesn't tell you how much is present (you cannot quantify it).

Observations are essential in this practical; you are looking for colour changes in particular which can indicate if a substance is present or absent:

Food Test	Colour of reagent	Positive test result	Negative test result
Iodine for starch	orange–brown	blue–black	orange–brown (no change)
Benedict's for sugar	light blue	green to brick–red	light blue (no change)
Ethanol for lipid	colourless	cloudy emulsion	colourless (no change)
Biuret for protein	blue	lilac–purple	blue (no change)

Important hazards

- Biuret solution contains copper (II) sulphate which is dangerous and iodine is an irritant - wear goggles
- Sodium hydroxide in biuret solution is corrosive, if any chemicals get onto your skin wash hands immediately
- Ethanol is highly flammable; keep it away from the Bunsen burner used in the Benedict's test (you should turn the Bunsen off completely)

Box 10 – Required practical: Enzymes and pH

Aim: To investigate the effect of pH on the rate of reaction of amylase

Amylase is an enzyme that digests **starch** (a polysaccharide of glucose) **into maltose** (a disaccharide of glucose)

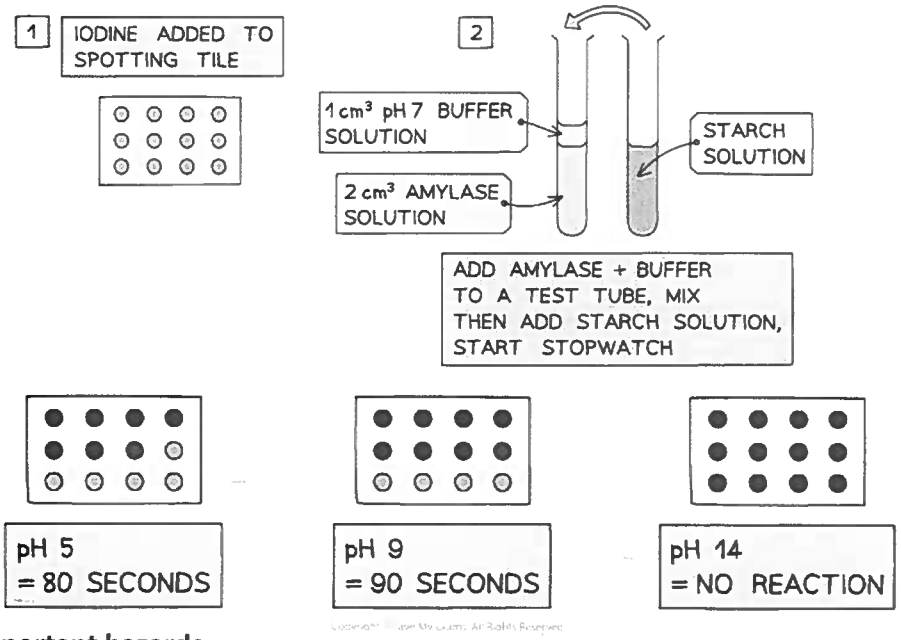
Starch can be tested for easily using **iodine solution**. If starch is present then the iodine will turn **blue-black**.

To investigate the breakdown of **starch** by amylase at different pHs you need **iodine solution, starch solution, amylase solution (containing the enzyme) and pH buffer solutions** of a range of different pHs.

Buffer solutions produce a particular pH, and will maintain it if other substances are added.

In a series of series of test tubes the pH buffer and the amylase solution are mixed. After 1min the starch solution is added.

A sample is removed from the test tubes every 10 seconds to test for the presence of starch. **Iodine solution** will turn a blue-black colour when starch is present, so **when all the starch is broken down the iodine solution will remain orange-brown.**



Important hazards

- Amylase solution may cause allergic reactions.
- Iodine solution is irritant. Avoid contact with skin and eyes. Wear safety goggles.

Physics Knowledge Organiser – Electricity I

Box 1 - Electric charge and current

Electric current is the flow of electrical charge.

Electric charge comes from the particles inside atoms: protons and electrons. The electrical charges that move through electrical circuits are normally electrons, but in some situations are ions.

When electrical charges flow, work can be done (energy is transferred)

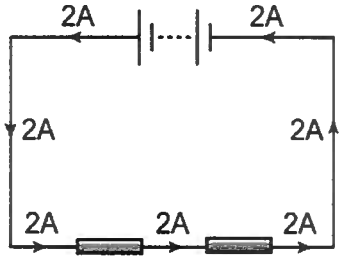
To make charges flow, a **closed**, or complete circuit is needed and a source of **potential difference: cells, batteries and mains**

Potential difference provides the force to make the **electric charges** in conductors **flow**.

The size of an electric current is the **rate** of flow of electric charge: current $(I) = \frac{Q}{t}$

In a circuit**, in any closed loop** of the circuit, the size of the **current** is the **same throughout** the loop (see diagram to the right).

Key Terms	Definitions
Charge (Q)	The particles that carry energy in a circuit. Also called charge flow. Charges can be positive or negative – in electrical circuits the charges are usually electrons. Measured in coulombs (C).
Current (I)	The rate of flow of charge. Measured in amps (A).
potential difference (V)	The potential difference is a measure of how much work is done per coulomb of charge. Measured in volts (V).
Resistance (R)	Resistance is the opposition to the flow of current. Measured in ohms (Ω).



Equation	Meanings of terms in equation
$Q = I\,t$	***Charge flow = current x time*** *Q = charge flow (coulombs, C)* *I = current (amps, A)* *t = time (seconds, s)*
$V = I\,R$	***Potential difference = Current x resistance*** *V = potential difference (volts, V)* *I = current (amperes, A)* *R = resistance (ohms, Ω)*

Box 2 - Current, resistance and potential difference

A component is any part of a circuit (e.g. a resistor, a bulb a motor etc. – see box 4).

The **current** through a component depends on the **potential difference** across the component and the **resistance** of the component.

The greater the resistance the smaller the current for a given potential difference.

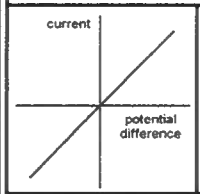
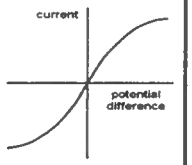
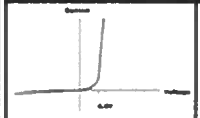
The smaller the resistance, the greater the current for a given potential difference.

When potential difference increases the current in the circuit also increases. The change in current depends on the type of component – see box 3.

Current, potential difference and resistance can be calculated using the equation below.

Potential difference = Current x Resistance

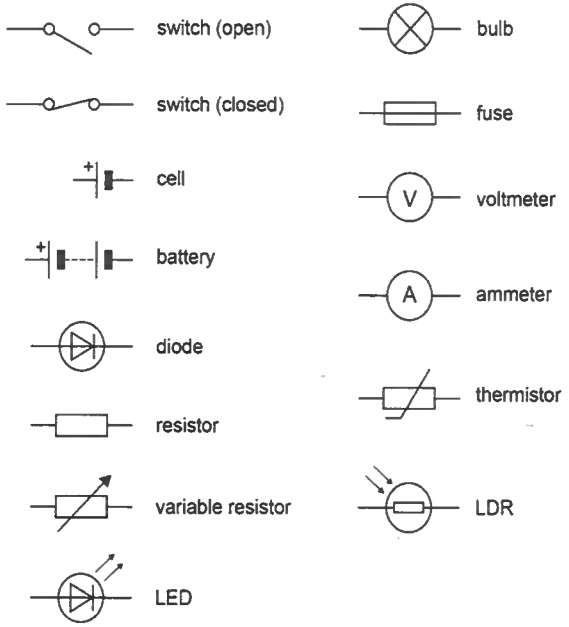
Box 3 Resistors - I-V graphs

	**Ohmic conductor**	*At a constant temperature, current is **directly proportional** to the* potential difference *across the resistor.* ***Resistance is constant.***
	**Filament lamp**	*As the potential difference increases the current increases.* *As **current increases, the resistance increases.** The temperature increases as current flows.*
	**Diode**	*Current flows in one direction only (forward.) Very high resistance in reverse.*

Thermistor - *Resistance of a thermistor decreases as temperature increases. Used in thermostats (e.g. ovens or central heating)*

LDR - *Resistance of a thermistor decreases as light intensity increases. Used to turn on night lights when it gets dark.*

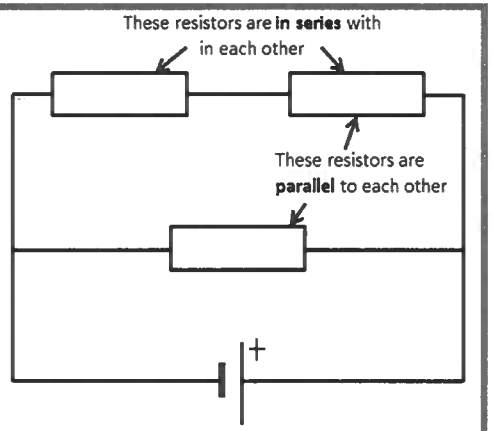
Box 4 – Circuit components and symbols



Physics Knowledge Organiser – Electricity I

Box 5 - Series and parallel circuits

There are two types of electrical circuit: series circuits and parallel circuits. In some circuits there are components connected in a series arrangement AND in a parallel arrangement. See the diagram to the right.

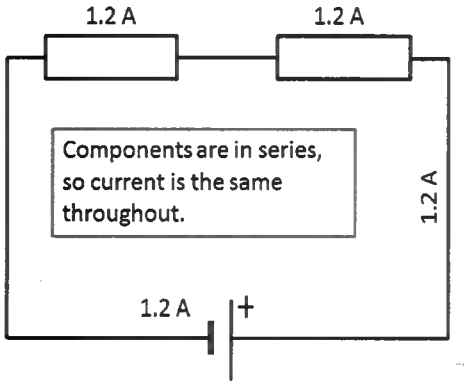


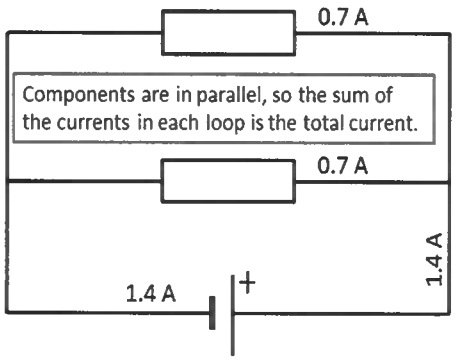
Key Terms	Definitions
series circuit	Components are connected one after another in a closed loop. There is only one route for the current to travel through.
parallel circuit	Components connected in different loops of a circuit. There are branches in the circuit with more than one way for the current to travel.
resistor	An electrical component that regulates current in a circuit.

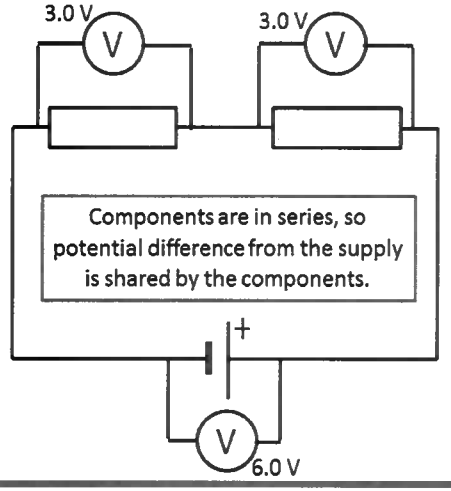
Equation	Meanings of terms in equation
For series circuits: $R_{total} = R_1 + R_2$	R_{total} = *total resistance (ohms, Ω)* R_1 = *resistance of first component (Ω)* R_2 = *resistance of next component (Ω) – and so on*

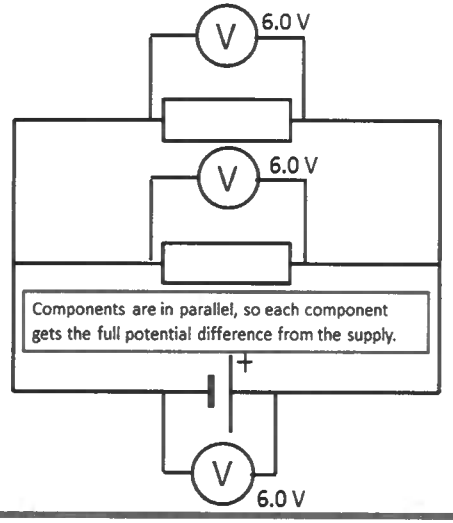
Box 6 – Current, potential difference and resistance in series and parallel circuits

Quantity	Components connected in series…	Components connected in parallel…
Current	The **current** through each component is the **same**.	Shared between the loops. The total current through the whole circuit is the **sum** of the currents through each loop of the circuit.
Potential difference	The **potential difference** provided by the power supply is **shared** between the components in series (not necessarily equally shared out – it depends on the resistance of each component).	The **potential difference** across **loop** is the **same**, and the same as the potential difference provided by the power supply.
Resistance	The **total resistance** of two components is the **sum** of the resistance of each component (see equation).	The total resistance of two components in parallel is always **less than** the resistance of the **smallest** individual **resistor**.









Year 9 Biology Knowledge Organiser Bioenergetics 1 – Photosynthesis

Box 1 - Photosynthesis

Photosynthesis is the chemical reaction that plants use to make food and transfer energy to the chemical store of glucose.
The reaction is **endothermic** – energy is absorbed from the surroundings.
The word and symbol equation for photosynthesis are:

$$\text{carbon dioxide} + \text{water} \xrightarrow{\text{light}} \text{glucose} + \text{oxygen}$$

$$6CO_2 + 6H_2O \xrightarrow{\text{light}} C_6H_{12}O_6 + 6O_2$$

Photosynthesis occurs in the **chloroplasts**.
Chlorophyll is a green pigment inside chloroplasts that **absorbs the light**.

Box 2 - Using The Glucose From Photosynthesis

Plants use the glucose in the following ways:

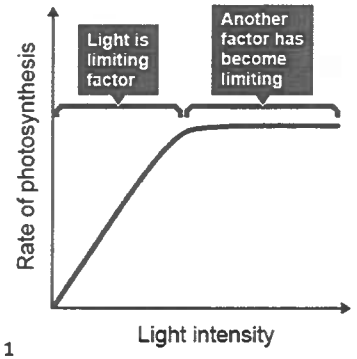
- Used in **respiration** in the cells of the plant/algae
- Converted into **starch** for storage.
- Used to produce **fats or oils (lipids)** for storage (particularly in seeds and nuts.)
- Used to produce **cellulose**, which is a component of the cell wall. Cellulose strengthens the cell wall.
- Used to produce **amino acids**, which in turn are used to synthesise (make) proteins (in the ribosomes). To produce amino acids, plants also require **nitrates** from the soil.

Box 3 - The Rate Of Photosynthesis

The following factors affect the rate of photosynthesis and are called limiting factors:

- **Temperature**:
- **Carbon dioxide concentration**
- **Light intensity**:.
- **Amount of chlorophyll**:

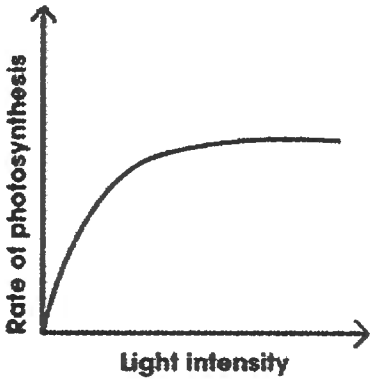
HT: at any given time, any one of these factors may be **limiting** the rate of photosynthesis.
A limiting factor is something that prevents a reaction happening faster at that moment.

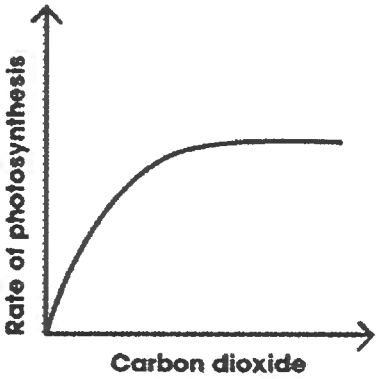


Light intensity decreases as distance increases according to an *inverse square law*: light intensity = $\frac{1}{distance\ from\ source^2}$

Key Terms	Definitions
nitrates	Ions containing nitrogen and oxygen. These are found in the soil; plants need nitrates to produce amino acids.
rate	How much a factor changes over time, for example how much glucose is produced every minute.
light intensity	The amount/strength of light. Use this term instead of 'amount of light'.
chlorophyll	The green pigment in leaves that absorbs light for photosynthesis. Chlorophyll is found in **chloroplasts.**
endothermic	A reaction that takes in energy from the surroundings.

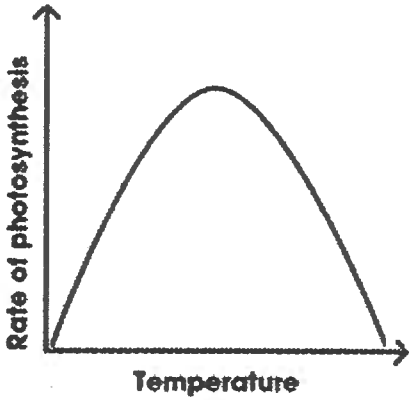
Box 4 – Limiting factor graphs





As **light intensity** and **carbon dioxide concentration** increase the rate of photosynthesis increases and then plateaus – stops increasing. Something else is the limiting factor.

As **temperature** increases the rate of photosynthesis increases initially until the optimum (best) temperature. The rate of photosynthesis then decreases as the temperature rises further. Enzymes have become denatured.



Year 9 Chemistry Topic Knowledge Organiser - Rocks and the Atmosphere

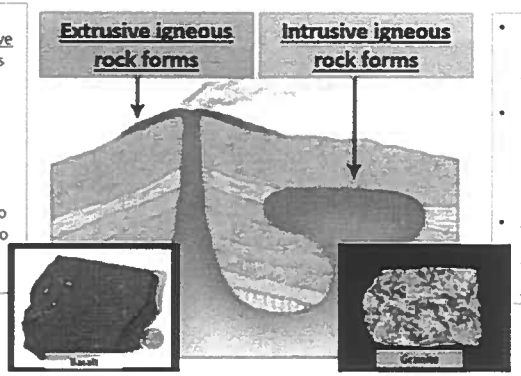
Box 7 – Types of Rock and the rock cycle

- **Rocks** are mixtures of minerals found in the Earth's crust.
- A **mineral** is a solid chemical compound. For example, the *rock* limestone contains the *mineral* calcium carbonate ($CaCO_3$) along with silica, clay, silt and sand.

Igneous rocks

- Examples of igneous rock include basalt, granite and obsidian.
- Igneous rocks are made of interlocking **crystals** which makes them **hard** and **non-porous** (don't absorb water). Igneous rocks never contain layers or fossils.
- Igneous rocks are formed when molten rock (called magma or lava) **freezes** from a liquid into a solid.

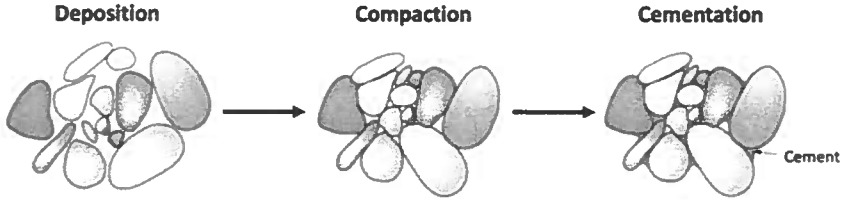
- **Lava** cooling on the surface forms extrusive igneous rocks, such as basalt.
- This is because, it is **cooler** on the surface which means the lava **freezes quickly**.
- As the lava freezes quickly, the crystals do not have much time to grow and are are **smaller**.



- **Magma** cooling inside the Earth forms intrusive igneous rocks, such as granite.
- This is because it is **warmer** under the crust which means the magma **freezes much more slowly**.
- As the magma freezes slowly, the crystals have time to grow and are **bigger**.

Sedimentary rocks

- Examples of sedimentary rock include limestone, sandstone and chalk.
- Sedimentary rocks are made of **grains** which makes them **soft** and **porous** (can absorb water). Sedimentary rocks may contain **strata (layers)** and / or **fossils**. A **fossil** is the preserved remains of a living thing from thousands or millions of years ago.
- Sedimentary rocks are formed when small particles of other rocks sink to the bottom of slow moving water and then get squashed and glued together.



Small particles called sediment **sink** to the bottom of slow-moving water.

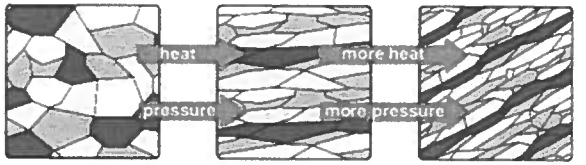
As more sediment is deposited, layers form and dead plants/animals may be trapped. The weight of the sediment **squashes** the layers below.

Any remaining water is forced out by the weight of the layers above, leaving minerals behind which **stick** the particles together forming a sedimentary rock.

Metamorphic rocks

- Examples of metamorphic rocks include marble, slate and gneiss (pronounced 'nice').
- Metamorphic rocks are made of interlocking **crystals** which makes them **hard** and **non-porous** (don't absorb water). Due to the way metamorphic rocks are formed, they may contain layers and / or distorted fossils.
- Metamorphic rocks are formed from existing rocks which have been exposed to **heat and pressure** over long periods of time.

The diagram shows how a sedimentary rock becomes a metamorphic rock:
- **Heat** changes the grains into crystals.
- **Pressure** compresses the crystals so they become smaller and arranged into layers.

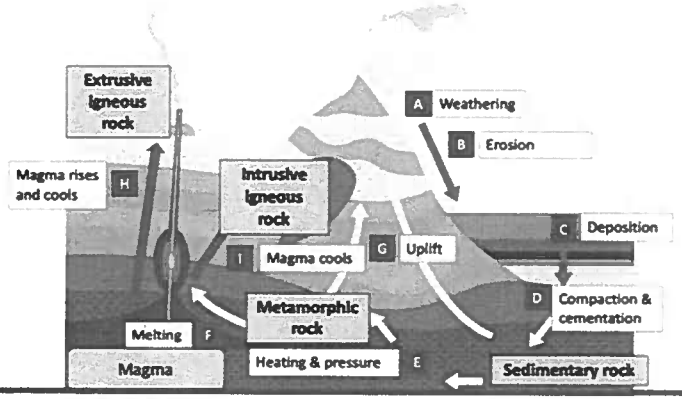


Weathering and erosion

- Weathering is the breaking down of large pieces of rock into smaller pieces of rock.
- There are three types of weathering:
  - Biological weathering is caused by **living organisms**, for example tree roots can cause rocks to break into smaller pieces.
  - Chemical weathering wears rocks away. It is caused by **chemical reactions between rain and rocks containing calcium carbonate** such as chalk, limestone and marble. Rainwater is naturally acidic and causes weathering. However, this process is sped up when pollution causes acid rain to form.
  - Physical weathering uses mechanical processes to break rocks down, for example waves can slowly wear away at cliffs. Changes of temperature can also cause physical weathering to take place through processes known as freeze-thaw and onion-skin weathering.
- Erosion is the **movement** of rock by water, wind or ice. The rocks are broken down into even smaller pieces by erosion, becoming rounder and smoother in the process.

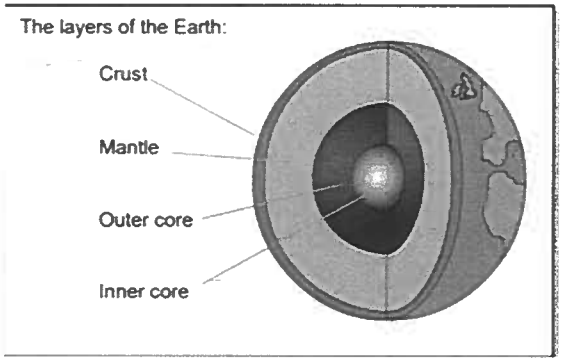
The rock cycle

- The rock cycle links together all the ideas in this topic as it describes how different rocks are made and changed over time:



Year 9 Chemistry Topic Knowledge Organiser - Rocks and the Atmosphere

Box 1 – The structure of the Earth



Crust – Made up of rock split into tectonic plates

Mantle – Made of mostly solid rock which can slowly flow.

Core – Made up of iron and nickel, the outer core is liquid, and the inner core is solid.

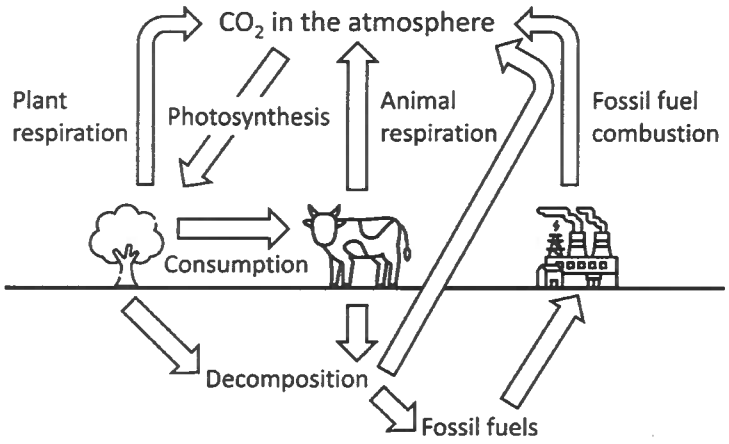
Box 2 – Gases in the atmosphere

The air around is called the atmosphere, it is made up of a mixture of gases.

Gas	% of volume
Nitrogen (N_2)	78
Oxygen (O_2)	21
Argon (Ar)	1
Carbon dioxide (CO_2)	0.04

Box 3 - The carbon cycle

Living and decomposing organisms are made up of compounds that contain the element carbon. These are recycled between stores within the atmosphere, ecosystems and the Earth's Crust.



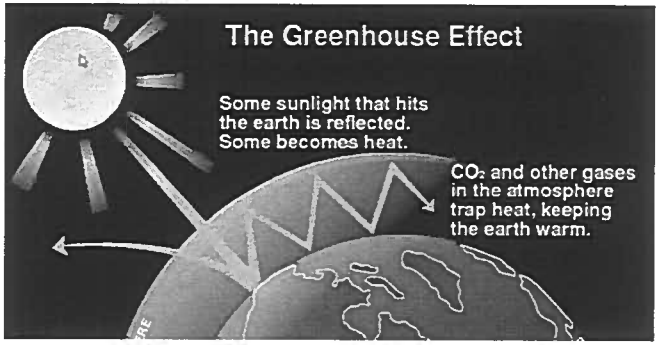
Key processes

Photosynthesis removes carbon dioxide from the atmosphere and stores it within producers (plants) as glucose (biomass)

Cellular respiration in plants, animals and bacteria releases carbon dioxide out into the atmosphere

Human activities such as **combusting (burning) fossil fuels** release carbon dioxide into the atmosphere, increasing the level of carbon dioxide in the atmosphere

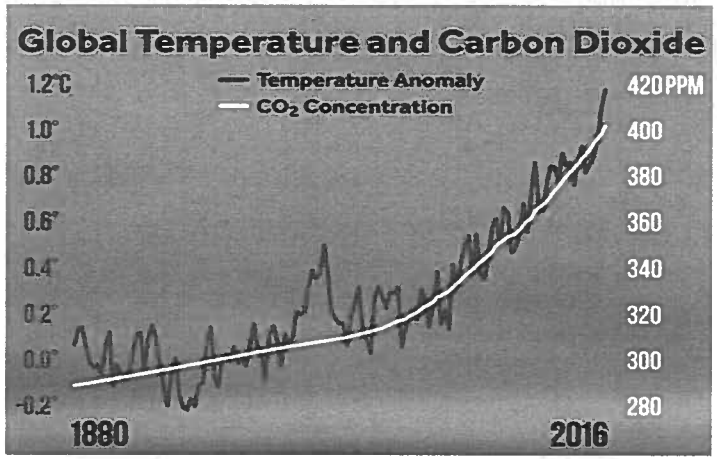
Box 4 – The Greenhouse Effect



Life can exist on Earth because energy transferred from the surface of the Earth forms a thermal energy store within the molecules of gas in the atmosphere – this is known as the greenhouse effect.

Carbon dioxide and methane stores a greater amount of energy compared to molecules of oxygen and nitrogen. Carbon dioxide is a greenhouse gas, as it has a higher thermal energy store. Without this effect the atmosphere would be too cold for life to exist.

Box 5 Global Warming and Climate Change



Human activities such as burning fossil fuels have increased the amount of carbon dioxide in the atmosphere, this has increased the average global temperature causing global warming.

Other activities which release carbon dioxide include

- Cutting down and burning large areas of forest to make space for crops and cattle.
- Growing rice and farming cattle, this releases methane another greenhouse gas.

Reducing the amount of fossil fuels used for electricity generation, heating and transport alongside reducing the amount of cattle farmed would slow down the increase in the global temperature.

Scientists have evaluated huge amounts of evidence to link human activities to global warming.

The impacts of global warming are called **climate change**. As a result, glaciers and polar ice are melting, this causes a sea level rise leading to flooding of low-lying land. Weather patterns are disrupted with increases in rain fall in some areas with other areas suffering droughts and heat waves.

Box 6 – Reduce, Reuse and Recycle

Material that make everything come from the Earth's crust, the atmosphere or the oceans. These resources will not last forever, and the faster we use them the sooner they will run out. To make these resources last longer we could reduce the amount of raw materials that we use to make products. Ensuring that products are reused in some way would also help to reserve important resources.

Recycling means collecting and processing materials that have been used so that they can be used again.

The following materials are often recycled – paper, plastic, metals and glass.

Glass is recycled by sorting the glass into different colours, heating the glass to a high temperature and then forming a new glass product in a new shape.

Advantages of recycling

Natural resources will last longer
Recycling materials transfers less energy than processing materials
Recycling reduces the amount of waste going into land fill.

Disadvantages of recycling

The recycling process uses a lot of energy
Waste needs to be sorted before it is processed.

Y9 History Knowledge Organiser: The Miners' Strike

1.1 Coal Mining in Britain

'King Coal'

Britain's main natural resource is **coal**. **Coal** is found under the ground in **coalfields** and must be mined. The largest UK coalfields are in **South Wales**, **Yorkshire**, and **Northumberland**.

Coal became important after the **Industrial Revolution** because it could be used to power steam ships and trains, fuel power stations, and produce **coke**, which was used to make steel. It became known as '**King Coal**' because it was so important to the economy.

By 1913, British **coal mines** produced 300 million tonnes each year. Britain **exported** more coal than the rest of the world.

Mining Villages

Before World War I, 1.2 million people were employed in **coal** mining.

Small communities - known as **pit villages** - developed around coal mines for the families of miners.

Mining was dangerous and demanding work. Miners spent long days deep underground where they faced the risk of **mine shafts** collapsing. Miners often suffered from **black lung** - a disease caused by coal dust. Explosions were also common: in 1913 a gas explosion killed 493 men in Senghenydd, South Wales.

These dangers were made worse by **mine owners** who cared only about **profit**, not the safety of miners.

Trade Unions

Miners formed **trade unions** to protect themselves against health risks, wage cuts, and unemployment. Unions used the threat of **strike action** to win demands from **mine owners**. They became powerful because of the idea of **solidarity** - all miners taking responsibility for each other.

The **National Union of Mineworkers (NUM)** was the most powerful **trade union** in Britain. By World War II, the **NUM** - along with other unions - had won important victories, including the weekend, the 8-hour work day, and wage increases.

The biggest victory came in 1947 when coal was **nationalised**. This meant the miners now worked for the government, not **mine owners**, and would be treated better. A government organisation called the **National Coal Board** was placed in charge of coal mining and miners.

1. 2 The 1970s

Trade Union Militancy: Trade unions reached the peak of their powers in the 1970s. Miners went **on strike** in 1969, 1972, and 1974 to demand higher wages. The NUM usually called **strikes** during the winter when coal was needed the most. They aimed to force the government to give in by completely stopping the supply of energy. In the 1972 **Battle of Saltley Gate**, 15,000 miners successfully closed a fuel storage depot in Birmingham and forced the government to give in to their demands.

Three Day Week: As the **NUM** prepared for another strike during the winter of 1973-4, the **Conservative** Prime Minister **Edward Heath** introduced a **Three Day Week**. For 6 weeks, businesses were only allowed to open for 3 days a week to reduce energy use and save up coal. TV stopped at 10.30pm and football matches had to be rearranged to avoid using floodlights. **Blackouts** and **power cuts** were common.

Heath called a general election and used the **slogan**: "Who governs Britain?" He was defeated.

1.3 Causes of the 1984-5 Miners' Strike

In March 1984, **NUM** members across the country began **strike action** against the **Conservative** government's plans to close coal mines. The miners spent over a year on strike.

Arthur Scargill

Scargill was the leader of the **NUM**. He believed the government wanted to destroy the **miners**.

Scargill was a **militant**. He argued that **strike action** was the only way to save jobs. His experience in the **Battle of Saltley Gate** convinced him that the **NUM** could win.

Margaret Thatcher

Thatcher was elected **prime minister** in 1979. She was a **conservative** and wanted revenge for **Heath's** defeat.

Thatcher opposed the power of the **trade unions** and called the **NUM 'the enemy within'**. She believed in **laissez-faire** and wanted to reduce the size of the **welfare state** and **privatise** coal.

Pit Closures:

In 1984, the government announced that 20 **pits** would close and 20,000 jobs would be lost. There were secret plans to close 75 more **pits**. The government claimed these **pits** were '**uneconomic**' because they did not make **profit**.

The NUM responded by arguing for 'coal not **dole**' and threatened to call a **strike** if the closures were not stopped. When the closures continued, **NUM** members went on **strike**.

1.4 Miner's Tactics

Pickets

The **NUM's** goal was to stop the supply of energy to the country and force the government to give in. To do this, the miners needed to shut mines across the country.

Striking miners - known as **pickets** - formed a **picket line** outside their mines to stop other miners from going to work or coal being taken out. Miners who continued to work were known as **scabs** and they were often abused and intimidated. **Pickets** often clashed with police who were sent to protect working miners and keep the mines open.

Flying Pickets

Although almost all miners in **South Wales**, **Yorkshire**, and **Scotland** came out on **strike**, there was less support in other areas, such as **Nottinghamshire**.

Scargill sent **flying pickets** - bus loads of **miners** from areas that strongly supported the strike - to areas such as **Nottinghamshire**. The **flying pickets** tried to stop miners going to work and to prevent coal being moved.

Miners' Support Groups

During the **strike**, the miners - who were all men - did not get paid. In response, miners' wives set up **support groups** such as **Women Against Pit Closures** to raise funds. The support groups ran soup kitchens, organised jumble sales, and wrote leaflets supporting the strike. This allowed the miners to stay **on strike** for longer and put extra pressure on the government.

Other groups showed **solidarity** with the miners by raising funds. For example, an **LGBT** group called **Lesbian and Gays Support the Miners (LGSM)** raised thousands of pounds.

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Y9 History Knowledge Organiser: The Miners' Strike

2.5 Failure of the Miners' Strike

The 1984-5 Miners' Strike was a failure for the **NUM** and a significant victory for **Thatcher's** government. Miners returned to work in 1985 and the mines were **privatised.** From over 1000 pits in 1913, there are now just 3, employing just 4,000 people. Britain **imports** almost all it's coal. Former **pit villages** have become areas of high **unemployment.** There were several reasons for the failure of the strike:

1. Government Preparation

The **Conservative government** spent years preparing for the strike. The government

a) **stockpiled** enough coal to fuel the country for 6 months

b) switched power stations to gas

c) **recruited** extra police officers

2. Police Tactics

The government trained the police in new **military-style** techniques to deal with striking miners, this included using **mounted officers, riot shields,** and **baton charges.**

Using these tactics police were able to stop **pickets** closing mines and power stations.

3. Economic Pressure

The strike was technically illegal - because the **NUM** had not held a **ballot** - this allowed the government to stop benefits for striking miners. The government **bribed** miners to return to work.

Many miners were forced to return to work in 1985 because their families were starving.

4. The Role of the Media

All the major newspapers supported the government. **Tabloids portrayed** the miners as selfish and violent. The **BBC** publicised the number of miners returning to work.

Thatcher called the **NUM** 'the enemy within' and used her speeches to turn **public opinion** against the miners.

5. Divide and Conquer

Some areas did not support the strike. In **Nottinghamshire**, which produced 25% of the country's coal, miners did not **strike.** This was partly because the government promised to protect their jobs. **Nottinghamshire** miners were also already well-paid and worked in good conditions.

6. No National Ballot

The law said that unions had to have a **national ballot** before taking **strike action.**

The **NUM** did not do this. The NUM's failure to hold a **national ballot** allowed the government to **portray** them as **undemocratic** and caused some miners - such as those in **Nottinghamshire** - to not support the strike.

2.6 The Battle of Orgreave

Events

On 18th June 1984, the **NUM** sent 5,000 **flying pickets** - led by **Scargill** - to **Orgreave** to stop lorries carrying **coke** leaving the plant. The police arrived with 6,000 officers in **riot gear**, dogs, and 42 **mounted officers.**

When the first lorries arrived, the **pickets** tried to push their way through the police lines, but they failed. In response, the **mounted police** charged. They were followed by police with **batons** who hit the unarmed **miners.** After this, some miners threw stones back at the police.

After a two hour break, in which **miners** sunbathed and played football, the police charged again, forcing the **miners** to flee.

95 **miners** were arrested and charged with **rioting**, which meant they could face years in prison. However, all these charges were dropped as no evidence could be found. The police were forced to pay £425,000 in **compensation.**

Role of the Media

The **media** presented the miners as responsible for the violence at **Orgreave.**

On the news later that evening, the **BBC edited** the video **footage** to show the miners throwing missiles before the police charged. They also deleted **footage** which showed police chasing and beating miners. The report also highlighted the use of weapons by the miners. Later, the BBC was forced to admit that it had **edited** the **footage** and given a **misleading account.** Nevertheless, the public got the impression that miners were violent.

The **tabloid newspapers** also supported the police. The next day **The Sun** described 'rock-hurling' miners and suggested that **Scargill** should feel 'shame' for encouraging violence.

The pro-government **media** coverage had a significant **impact** of **public opinion.** By December 1984, a poll found that 88% of the public disapproved of the **miners'** methods.

VOCABULARY

Ballot	A vote
BBC	The British government-owned media organisation
Baton	A stick used to hit people
Black lung	A lung disease cause by inhaling coal dust
Coalfields	Areas where coal can be mined
Coke	A substance that can be produced from coal and makes steel
Conservative	Political party
Compensation	Money to make up for a mistake
Dole	Slang for unemployment benefit
Edited	Changed
Export	Sell goods to other countries
Flying Pickets	Miners bused to other places to close mines
Footage	Video
Import	Buy goods from other countries
Laissez-Faire	Political idea of opposing government intervention
Media	TV / radio / newspapers
Militant	Wanting confrontation, especially strikes
Mine owners	Businessmen who own mines
Misleading account	A story that exaggerates or changes details
Mounted	On horseback
Nationalise	Bring under government control
NUM	The National Union of Mineworkers (the miners' trade union)
Nottinghamshire	A county in central England
Picket	A miner who is on strike and trying to close his mine
Picket line	A group of pickets trying to close a mine
Pit Villages	Communities that depended on a mine
Privatise	Remove from government control and sell to businessmen
Profit	Money
Public opinion	The ideas that ordinary people have
Recruited	Hired
Riot gear	Shields / helmets / etc
Scabs	Miners who did not go on strike
Seized	Took control of
Solidarity	Showing support for others
Stockpile	Build up a supply
Strike	Stopping work in protest
Support groups	Groups who raised money to support the NUM
Tabloid newspapers	Cheap and popular newspapers
Tactics	Plans / methods
Trade unions	Organisations of workers
Undemocratic	Not based on voting
Uneconomic	Not making profit

Y9 History Knowledge Organiser: The First World War

Unification of Germany	Triple Alliance agreed	First Moroccan Crisis; Schlieffen Plan agreed	First Dreadnought built	Triple Entente agreed; Bosnian Crisis	Second Moroccan Crisis	Assassination of Franz Ferdinand	World War 1 began	World War 1 ended
1871	1882	1905	1906	1908	1911	June 1914	Aug 1914	Nov 1918

1.1 Nationalism

The early 20th Century saw the rise of intense nationalism across Europe.

Germany

Germany was a new country. **Unification** had only taken place in 1871. Rapidly, Germany had become the most powerful country on **mainland Europe**. It had a powerful **industrial economy** and looked after it's workers with a **welfare state**.

Germany was not a true democracy. **Kaiser Wilhelm II** controlled the most important decisions. Although he was **Queen Victoria's** grandson, Kaiser Wilhelm was envious of British power. He wanted to turn Germany into a great world power to rival - and maybe replace - Britain.

Wilhelm's plans were under threat however. He worried that the rise of **socialism** and **democracy** in Germany would soon mean that he would not be able to take the decisions he needed to make Germany great.

Britain

British nationalism was based on 200 years of **imperial** and **naval dominance**. The '**penny press**' celebrated British superiority in novels such as **The Battle of Dorking**.

1.2 Imperialism

During the 19th Century, European countries developed overseas empires for several reasons:

Prestige - Having a large empire was a sign of a country's **superiority**. Germany, in particular, wanted to gain **colonies** to gain equality with Britain.

Trade - European economies needed to find **raw materials** to produce **manufactured goods**. They also needed colonies to provide **markets** for these goods.

Strategy - In some cases, European empires **colonised** territory just to stop a rival empire expanding further. This was especially true in **Africa**.

As European empires expanded, tensions grew between them, creating flashpoints:

In **AFRICA**, **Kaiser Wilhelm** tried to gain a '**place in the sun**' for Germany, leading to **flashpoints** in **Morocco** in 1905 and 1911.

In **THE BALKANS**, **Austria-Hungary** and **Russia** wrestled for control of countries created by the collapse of the **Ottoman Empire**, leading to **flashpoints** such as the **1908 Bosnian Crisis**.

Y9 History Knowledge Organiser: The First World War

2.1 Militarism

Nationalism and imperialism led to aggressive militarism in all European nations.

The military had more influence over government than ever before

Many army generals followed the ideas of **Social Darwinism** and so believed that war was good for the world because it allowed the strong to triumph over the weak.

In Germany and Russia, generals pressured governments into following a more aggressive policy. For example, German generals persuaded the **Kaiser** to agree to the **Schlieffen Plan**: a plan to defeat France before Russia could **mobilise** soldiers.

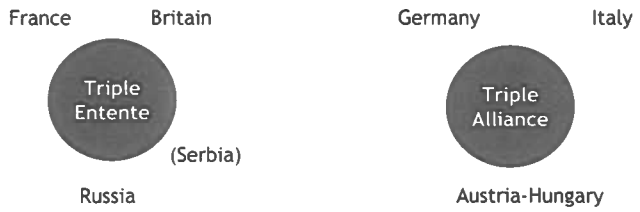
An arms race developed between Britain and Germany

As the risk of war increased, countries began to expand their armed forces. Every country apart from Britain introduced **conscription** in the 1900s. Between 1900 and 1914, Germany increased **military spending** by 73%.

A **naval arms race** developed between Germany and Britain with both sides competing to build new **Dreadnoughts**. Between 1909 and 1911, Germany built 9 **Dreadnoughts** whilst Britain built 18.

2.2 Alliances

In order to protect themselves, countries negotiated alliances with other countries.



Each member of the **alliance** promised to **declare war** if another member of the **alliance** was attacked.

2.3 The Assassination of Archduke Franz Ferdinand

In June 1914, an assassination triggered a European war.

Archduke Franz Ferdinand was the heir to the throne of the **Austro-Hungarian Empire**.

On 28th June 1914, **Franz Ferdinand** visited **Sarajevo**, the capital of **Bosnia**, part of **Austria-Hungary**. Many **Bosnians** did not want to be part of **Austria-Hungary** but be united with **Serbia**.

The Archduke and his wife were **assassinated** by a gang of **Bosnians** led by **Gavrilo Princip**. The **assassins** had been given weapons by members of the **Serbian** government.

In response, Austria-Hungary prepared to **retaliate** against Serbia.

They secured the agreement of Germany to support them - no matter what. This was known as the German '**blank cheque**'.

On 31 July, Russia **mobilized** its army to protect Serbia from Austria-Hungary and Germany.

Following the **Schlieffen Plan**, Germany attacked France.

Britain, as part of the **Triple Entente**, declared war on Germany and her allies on 3rd August.

VOCABULARY

Alliance	An agreement between two countries to support each other in war
Arms race	Competition to build the largest military / most weapons
Assassinated	Shot dead
Conscription	Forcing all men of a certain age to join the army
Dreadnought	Fast modern battleship equipped with large guns
Escalate	Become more serious
Flashpoints	An event where tension could potentially lead to violence
Kaiser Wilhelm	German king
Markets	Places where goods could be sold
Militarism	The army having power / expanding the army and navy
Mobilise	To get an army ready for battle
Nationalism	Believing that your country is superior to others
Over the top	Attacking out of a trench
Overriding	Most important
Penny Press	Cheap books and newspapers
Prestige	Respect and admiration from others
Raw materials	Coal, wood, minerals etc used to manufacture goods
Recklessness	Not being careful
Restore	Bring back
Retaliate	Attack somebody in return for them attacking you
Revanche	French word for revenge (on Germany)
Squabble	An unimportant disagreement
Strategy	Long term plan
Tsar	The king of Russia
Unification	When different places are brought together to form one country

Y9 History Knowledge Organiser: WW1 Conscientious Objectors

KPI 1 What are Conscientious Objectors?

Some people refused to join the army, even under conscription. These **conscientious objectors** were against the war on moral or religious grounds. Some **conscientious objectors** agreed to work in hospital or act as stretcher bearers. Those who refused to go were put in prison. Conscientious objectors were people who simply did not want to fight in World War One. Conscientious objectors became known as 'conscies' , 'conchies' or C.O's and they were a sign that not everybody was as enthusiastic about the war as the government would have liked.

KPI 2 Conscription

Battles such as the Somme had cost Britain a vast number of casualties. By 1916, volunteers to join the British Army were starting to dry up. In response to this, the government introduced conscription in 1916 - where the law stated that you had to serve your country in the military for a certain period of time. A 'conscience clause' was added whereby those who had a "conscientious objection to bearing arms" were freed from military service. The 'conscience clause' which allowed people the right to refuse to join up if it went against their beliefs. Those who claimed to be conscientious objectors had to face a tribunal to argue their case as to why they should not be called up to join the army.

Absolutists	Opposed to all aspects of military service
Alternativists	Prepared to take on civilian work
Clause	A law
Conscription	Compulsory enrolment in the armed forces
Conscientious Objector	People who refused to join the army as fighters.
Tribunal	A court of justice
Propaganda	information, especially of a biased or misleading nature, used to promote a political cause or point of view.
Pacifists	Someone who doesn't believe in war or violence
Non-combatants	Soldiers that do not fight
Quaker	A religious group that are against war
Objection	Going against something
Moral	Something you believe in / your morals

KPI 3 Tribunals

But the tribunals didn't use their powers with much judgement or sympathy. Not only did they rarely grant unconditional exemption, they also often allocated absolutists or alternativists to non-combatant duties. In many cases applications were turned down altogether, which meant that the men were liable for call-up as ordinary soldiers. These unwilling conscripts could be arrested and handed over to the military; if they disobeyed military orders they would be court-martialled and sent to prison.

KPI 5 WW1 Propaganda

What the public thought about the war really mattered. The government needed to recruit lots of soldiers and wanted people to support them. Posters were printed that made the army look exciting. Other posters told men it was their duty to join, that they would feel proud if they did and guilty or embarrassed if they didn't join.

What is propaganda? Propaganda is used to try to make people think a certain way. Posters were very carefully designed with words and images which had a special effect on the viewer. Stories about bad things the Germans had done were told to make people angry and frightened so everyone would want Britain to beat them in the war. But many tales were untrue and Germany told the same stories about Britain.

KPI 4 Who were Conscientious Objectors?	Absolutists	Alternativists	Non-Combatants
• Some were pacifists who were against war in general. • Some were political objectors who did not consider the government of Germany to be their enemy • Some were religious objectors who believed that war and fighting was against their religion. Groups in this section were the Quakers and Jehovah Witnesses.	Some were 'absolutists', opposed to conscription as well as war, upholders of civil liberty and the freedom of the individual - values thought to be respected in Britain. Absolutists (most of whom were committed pacifists) believed that any alternative service supported the war effort and in effect supported the immoral practice of conscription as well. The tribunals had the power to give these men complete and unconditional exemption.	Some were 'alternativists', prepared to undertake alternative civilian work not under any military control. Tribunals had power to exempt them from military service on condition that they actually did this work.	'Non-combatants' were prepared to accept call-up into the army, but not to be trained to use weapons, or indeed have anything to do with weapons at all. Tribunals had power to put these men on the military register on this basis. Non-Combatant Conscientious Objectors often became stretcher bearers or medics.

Geography Topic 4 – 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 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 upper portion of the mantle and the crust, the outermost layers of Earth's structure.

KPI2 – Geology and Weathering

Types of <u>geology</u> (rocks):

Igneous rocks:

- Formed from molten rock
- The molten rock cools slowly allowing minerals to form large crystals which lock together
- Very hard and durable
- 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.

<u>Weathering</u>:

1. Freeze-thaw weathering: the disintegration (break-up) of rocks by physical forces. Water freezes in faults in the rocks and expands, 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.
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:

- **<u>Hydraulic Action</u>**: 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.
- **<u>Abrasion</u>**: 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.
- **<u>Solution</u>**: Salts or chemicals in the water act to dissolve the rocks they touch
- **<u>Attrition</u>**: The sea picks up angular rocks and knocks them into each other. This chips away the corners to make them rounder

Processes of Transportation

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

KPI4: Landforms created by processes of erosion.

Cave, arches, stacks and stumps.

1. A **<u>fault</u>** opens in the rocks
2. Due to **<u>hydraulic action</u>** the fault becomes bigger to form a notch
3. **<u>Abrasion</u>** and **<u>hydraulic action</u>** 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 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 inland.

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Geography Topic 4 – 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 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.
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. 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.
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.

Geography Year 9 Topic 5 How sustainable is ecosystem exploitation?

KPI1: Key words

- **Ecosystem**: A community made up of biotic and abiotic elements.
- **Biotic**: Living organisms (e.g. plants and animals)
- **Abiotic**: Non-living things (e.g., rock and soil)
- **Producer:** converts energy from the sunlight into sugars by photosynthesis to produce their own food e.g. plants.
- **Consumer:** animals who feed on the plants, getting the energy from the producer.
- **Decomposer:** break down dead organisms/material and then the nutrients are recycled back into the soil e.g., fungi/bacteria.
- **Biomes:** A biome is a large-scale ecosystem defined by abiotic factors: Climate, relief, geology, soils, and vegetation.
- **Latitude:** The distance of a place north or south of the earth's equator.
- **Exploitation:** when the natural resources for an ecosystem are used for economic benefit.
- **Deforestation:** Cutting down trees
- **Pastoral farming:** is aimed at producing livestock, rather than growing crops.
- **Arable farming:** involves growing crops such as wheat and barley.
- **Hydroelectric Power:** electricity produced from generators driven by turbines that convert the potential energy of moving water into mechanical energy.
- **Infrastructure**: the things that makes a country work. It is the basic equipment and structures (such as roads and bridges) that are needed for a country, region, or organisation to function properly.
- **Food Chains**: A food chain refers to the order of events in an ecosystem, where one living organism eats another organism, and later that organism is consumed by another larger organism.
- **Food Webs**: A food web consists of all the food chains in a single ecosystem

KPI 1 What is an ecosystem?

Ecosystem: an environment in which plants and animals interact with each other and the climate on rocks and in soil

Parts of an ecosystem: animals, plants, rocks and soil and the climate.

We can classify parts of an ecosystem as either:

- **Biotic** (alive) – plants and animals.
- **Abiotic** (they have never been living) – climate and rocks.

Transfer of energy in an ecosystem:

Energy transfers can be shown in two different ways for ecosystems:

- A **food chain** outlines who eats whom e.g. insects eat plants, birds eat insects.
- A **food web** is all of the food chains in an ecosystem.

Ecosystems are very sensitive to change. The **biotic and abiotic** parts of the ecosystem can be altered by either natural factors or human management.

Changes to the ecosystem caused by natural factors include:

- drought (*lack of rain)*
- flood

KPI3 How does latitude affect the location of biomes?

Biome: A large-scale ecosystem.

Location of Biomes:

- **Deserts** are located along the Tropic of Cancer and Capricorn. They are located between 15-35°North and South of the Equator. Deserts are in the North of Africa, Eastern parts of the USA & central Australia.
- **Grasslands** are located above the Tropic of cancer and Capricorn. They are located between 23.5°- 60° north and south of the equator. Grasslands are in North America, Asia and South America.
- **Tundra's** are located between 60°- 90° north of the equator. They are in the north of North America, Europe and Asia.

There are TWO reasons why the latitude affects the temperature of biomes.

- Reason 1: Distance from the sun. Places located at higher latitudes (further away from the equator) are colder because of the shape of the earth, the sun's rays have a longer distance to travel.

KPI 4 How are tropical rainforests exploited?

Example country: The Amazon rainforest is located on the continent of South America. Most of the Amazon is in the country of Brazil.

Causes of **deforestation**:

- **Logging**: The removal of trees in order to use their wood. This has caused an area of 589,000 km², larger than France, has disappeared in the last 30 years.
- **Cattle farming**: Farmers clear the forest and then use the land to graze (feed their cattle)
- **Road building**: Land is cleared to build roads to bring equipment and transport products to be sold. For example, the Trans-Amazonian Highway began construction in 1972 and is 4,000 kilometres long.
- **Settlement and population growth**: Clearing the forest to build settlements (housing) for workers. For example, Manaus, a city in the Amazon has a population of over 2 million showing the population growth.
- **Mineral extraction**: Vast areas of tropical rainforests to allow mining to occur. It has caused 50,000 hectares of land deforested.
- **Hydroelectric Power:** HEP in the Amazon Basin has caused areas of forest being flooded to create the reservoirs and dams. The flooding of the Balbina dam in Brazil resulted in the loss of 920 square miles of tropical rainforest.

Geography - Year 9 Topic 5 How sustainable is ecosystem exploitation?

KPI 5 What is coltan and where is it mined?

What is coltan? **-** Coltan is a mineral which is used in the making of mobile phones, laptops, and computers.

Example - The Democratic Republic of the Congo (DRC) is rich in mineral wealth and contains 80% of the world's coltan. Many coltan mines are in the DRC's Kahuzi-Biega National Park.

Why is coltan mining so damaging?

Coltan mining often takes place in areas where there are tropical rainforests. Before mining, a large amount of tropical rainforest needs to be cleared.

Benefits of coltan mining:

- Coltan is worth $100 per kilo.
- Miners earn between $10-$50 a week. This is 5 times more than most other people in the DRC.
- Coltan is one of the world's most vital *(important)* minerals, and 60% of coltan globally is found in the Democratic Republic of the Congo's (DRC) Kivu province. In 2019, 40% of the global coltan supply was produced in the DRC.

Problems of coltan mining:

- The Kahuzi-Biega national park is the largest national park in the DRC. It is a vast area of tropical rainforest and is home to the Eastern Lowland Gorilla. The population of the Eastern Lowland Gorilla has declined by 90% since 1990 from 5000 to 500. This is due to a loss of habitat and miners selling their meat as bush meat.
- The Park is a UNESCO world heritage site due to its amount of biodiversity (*range of plants and animals)* and vast areas of tropical rainforest have been cleared to make way for the mines.
- 30% of children have abandoned school to work in the mines.
- Surrounding countries are also starting to mine Coltan. The Rwandan army are making £20 million a month.
- Competition for the mines is fierce and often very violent.
- Gangs and rebel troops have taxed miners for access to the mines. The money from the tax is used in the illegal buying and selling of weapons.
- Occupational hazards include daily exposure to Radon, a radioactive substance associated with coltan, which has been linked to lung cancer.

KPI 5 How are oceans being exploited?

Oceans are an important **ecosystem** as they are a huge source of food for the world's population. Over 1 billion people rely on fish as their main source of protein. This means many of the world's oceans are used for fishing. The global fishing industry employs over 38 million people. However due to the high demand for fish and continued employment of people it is causing some areas to be over fished resulting in ocean ecosystems being exploited and damaged.

Trawling:

A dredge is towed along the bottom of the sea by a fishing boat in order to collect edible (able to eat) bottom-dwelling species (animals that live at the bottom of the ocean).

- ***Problems:*** The nets or dredges both scoop up all kinds of fish, even the ones that they may not be trying to catch. The nets and dredges stir up and disturb all the bottom dwelling fish's habitat. In other words, all the living plants that grow on the lakes floor would be damaged.
- ***Advantages:*** You can catch a bunch of fish at once. In other words, it is fast and efficient. You can keep up with the demands of the stores that sell fish. So, fishing businesses can also make more money.

KPI 6 What is sustainable fishing?

Sustainable fishing -protects ocean environments and ensures fish stocks are not depleted *(run-out)* so they are there for future generations.

- Higher labour costs due to more time intensive fishing practices
- Lower profits due to not being able to catch at larger scales due to quotas
- Fish stocks remain healthy so will be there for future generations
- Can help to ensure food security as supplies won't run out.
- Protects endangered species

KPI 5 How is the savanna being exploited?

Safaris are popular holidays that people from higher income countries like the UK, USA and France go on. One of the most popular is the Masai Mara which is located in the Serengeti National Park. The Masai Mara is home to huge herds of wilder beast, lions, elephants, rhinos and many more. This attracts between 150,000 – 200,000 visitors each year.

Benefits of safari holidays

- Tourists can be educated about the dangers to the ecosystem and ways to help conserve it
- 15% of Kenya's income is from tourism.

Problems of safari holidays:

- Wildlife can be disrupted by tourism in the area.
- Locals only do the low-skilled jobs as companies will bring in foreign workers for the high-skilled jobs.

Year 9 French Term 3 – Work/Holiday accommodation

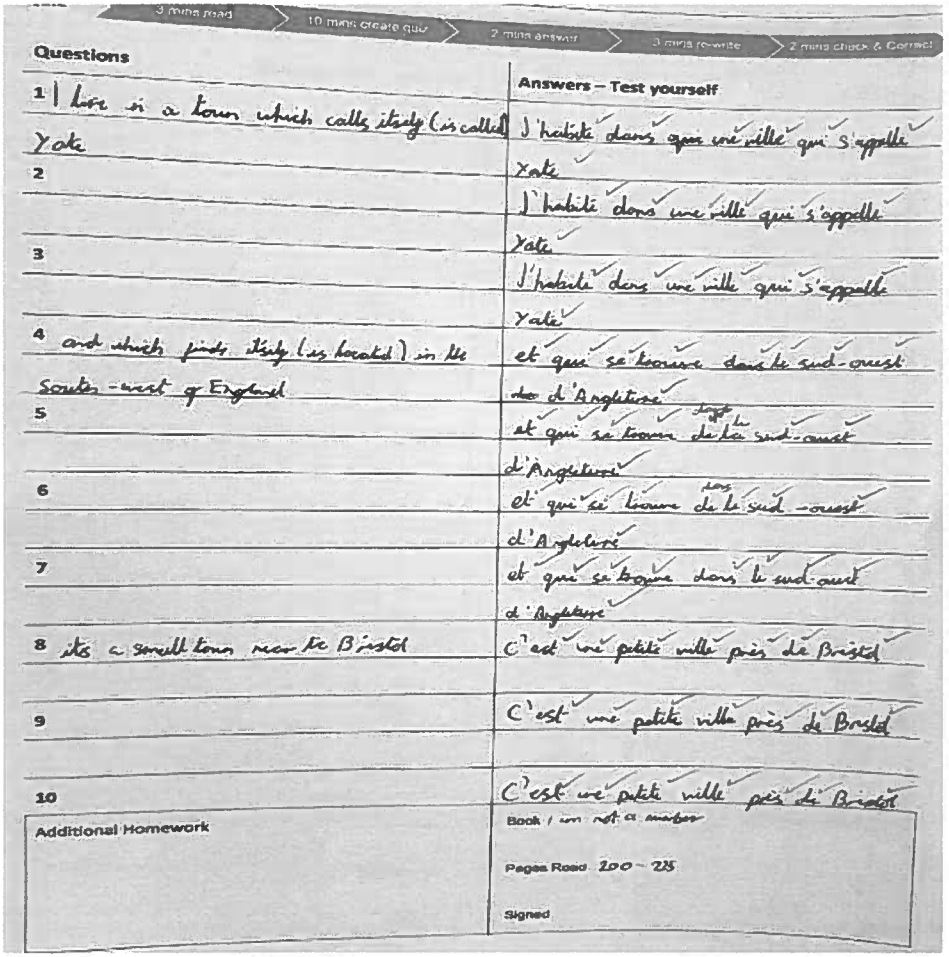
1	Actuellement mon oncle **travaille** comme patron	Currently my uncle **works** as a boss
2	Maintenant mon frère **travaille** comme vendeur	Now my brother **works** as a sales assistant
3	Quand j'étais plus jeune ma tante **a travaillé** comme serveuse	When I was younger my aunt **worked** as a waitress
4	dans un restaurant	in a restaurant
5	Dans le passé ma belle-mere **a travaillé** comme infirmière	in the past my step mum **worked** as a nurse
6	dans un hôpital	in a hospital
7	plus tard dans la vie **je voudrais** travailler comme policier	later in life **I would like** to work as a police officer
8	quand je serai plus âgé **j'ai envie de** travailler dans un commissariat	when I am older, **I want** to work in a police station
9	quand j'aurai dix-huit ans **mon but est de** travailler avec les autres	when I am 18 years old **my goal is** to work with others
10	Un jour **j'ai l'intention de** travailler dans un lycée	One day **I intend** to work in a college
11	**Je suis allé(e)** en vacances	**I went** on holiday
12	**Je suis resté(e)** loin de la plage	**I stayed** far from the beach
13	**il y avait** un terrain de sport	**There was** a sports pitch
14	mais **il n'y avait pas de** salle de jeux	but **there wasn't** a games room
15	l'hôtel **était** cher et sale	the hotel **was** expensive and dirty
16	si **j'avais** le choix, je resterais dans un hôtel de luxe	if **I had** the choice, I would stay in a luxury hotel

17	si **j'avais** assez d'argent, il y aurait une piscine	if **I had** enough money, there would be a swimming pool
18	si **je devais** *choisir*, ce serait sur une île	if **I had** *to choose*, it would be on an island
19	pour mes vacances de mes rêves, il ferait chaud	for my dream holiday, it would be hot
20	**Je voudrais** réserver une chambre pour trois nuits	**I would like** to reserve a room for 3 nights

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: J'aime jouer/ faire/ acheter I like **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

Example of a French/Spanish LSQ:



3 mins read | 10 mins create quiz | 2 mins answer | 3 mins re-write | 2 mins check & Correct

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 / on not a number Pages Read 200 – 225 Signed

Year 9 Spanish Term 3 – Work/Holiday accommodation

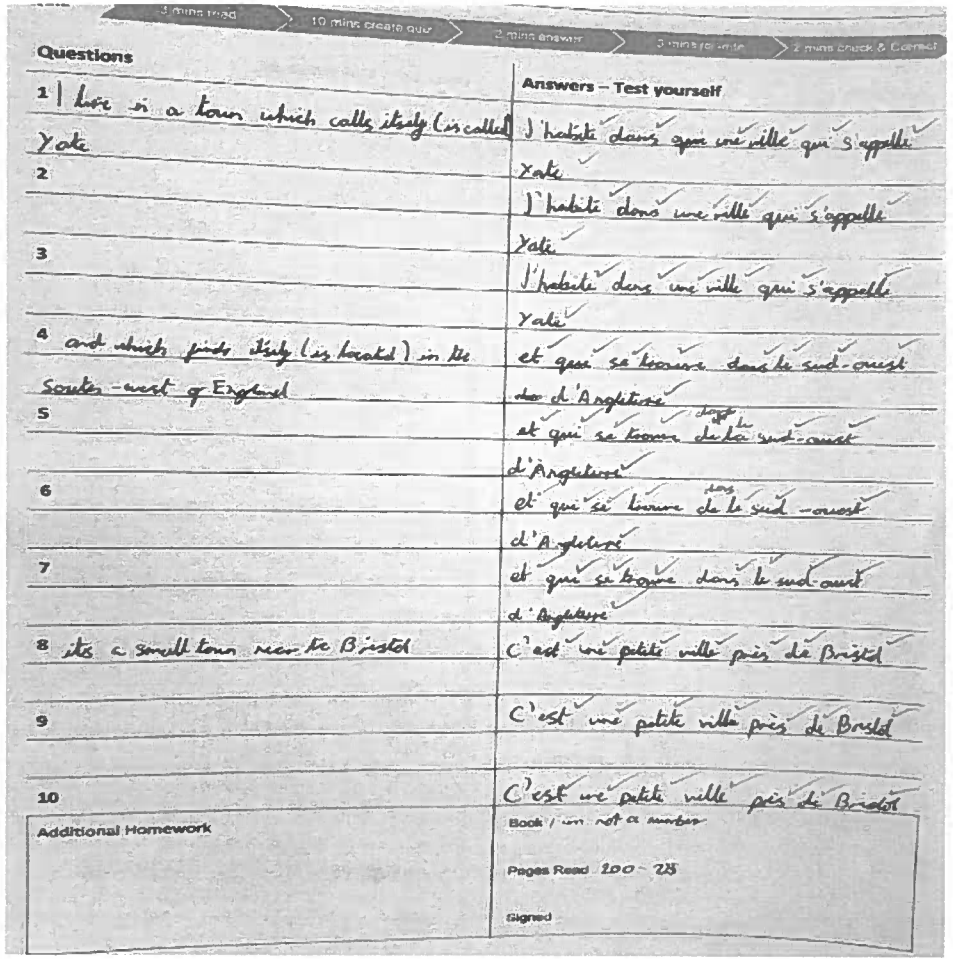
1	Actualmente mi tio **trabaja** como jefe	Currently my uncle **works** as a boss
2	Ahora mi hermano **trabaja** como cocinero	Now my brother **works** as a cook
3	Cuando era mas joven mi tía **trabajó** como camarera	When I was younger my aunt **worked** as a waitress
4	en un restaurante	in a restaurant
5	en el pasado mi madrastra **trabajó** como enfermera	in the past my step mum **worked** as a nurse
6	en un hospital	in a hospital
7	más tarde en la vida **me gustaría** trabajar como policía	later in life **I would like** to work as a police officer
8	cuando sea mayor **quiero** trabajar en una comisaría	when I am older, **I want** to work in a police station
9	cuando tenga 18 años **tengo ganas de** trabajar con	when I am 18 years old **I am keen** to work with others
10	una dia **tengo la intención de** trabajar en una escuela	One day **I intend** to work in a college
11	**fui** de vacaciones	**I went** on holiday
12	**me alojé** lejos de la playa	**I stayed** far from the beach
13	**había** un campo de fútbol	**There was** a football pitch
14	**no había** una sala de juegos	**There wasn't** a games room
15	el hotel **era** caro y sucio	the hotel **was** expensive and dirty
16	Si **tuviera** mi elección, me alojaría en un hotel de lujo	if **I had** the choice, I would stay in a luxury hotel
17	Si **tuviera** más dinero, habría una piscina	if **I had** enough money, there would be a swimming pool

18	Si **fuera** posible, <u>sería</u> en la costa	if **it were possible**, <u>it would be</u> on the coast
19	Para las vacaciones de mis sueños, <u>haría</u> calor	for my dream holiday, <u>it would be</u> hot
20	**Me gustaría** <u>reservar</u> una habitación para tres noches	**I would like** <u>to reserve</u> a room for 3 nights

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: <u>Me gusta</u> jugar/ hacer/ comprar I like **to play/to do/to buy** After suelo/solía, you always need an infinitive: <u>suelo</u> 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

Example of a French/Spanish LSQ:



5 mins read | 10 mins create quiz | 5 mins answer | 5 mins re-write | 2 mins check & Correct

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	Yate 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 d'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 / on not a number Pages Read 200 - 225 Signed

Yr 9- Is there life after death?

Immortality	The ability to live forever; eternal life.
Resurrection	Rising from the day – Christian belief celebrated on Easter Sunday
Reincarnation	The belief that the soul is reborn into a new body
Materialism	Nothing else exists apart from matter.
Soul	The spiritual part of a human being. It is believed by many that the soul is eternal.
Dualism	A physical body and a spiritual soul.
Apostles creed	"I believe in the resurrection of the body and life everlasting."
Heaven	A physical place, or a state of mind, associated with God and the afterlife.
Hell	A place of torment and punishment for those who have done wrong.
Purgatory	Roman catholic belief- some people who have sinned are purified in a 'cleansing fire'

KPI1- Describe beliefs surrounding immortality

- Atheists and humanists believe that nothing survives death. There is no soul; we are just physical, material beings, so when we die that is the end.
- Hindus, Buddhists and Sikhs say we will be reincarnated according to the law of karma. The aim of every living being is to escape from this cycle of birth and death (samsara), to gain enlightenment
- Jews, Christians and Muslims believe in resurrection, heaven and hell. After death we will rise from the dead to be judged by God.

KPI2 Explain contrasting views surrounding the soul

Dualism is the belief that we are made of two separate parts: a physical body and a spiritual soul. Dualists believe that our soul (or spirit) lives in our physical body**, Descartes**. **Materialism** is the view that nothing else exists apart from matter. All we have, as human beings, is a physical body; there is no soul or spirit. **Aristotle**

KPI3: Examine Christian belief in the resurrection

- Christians believe in resurrection and eternal life
- Christians believe that just as Jesus rose again after death
- Judgement Day
- Those who believe in Jesus and have lived a good life will be taken to heaven. Those who have rejected God's love and caused harm to others will be sent to hell. The Parable of the sheep and goat

He will come to judge the living and the dead "I am the resurrection and the life."

KPI4 : Explain Christian belief in the after life

Heaven- Heaven is described as eternity in the presence of God. Heaven is the ultimate aim for all Christians in order for their soul to be reunited with God and united with Christ. **"In my fathers house are many rooms", "There will be no more pain and sorrow".**

Hell- Christians believe that Since God has given human beings free will, there must be an opportunity for people to reject God. This is the basis of the idea of Hell.

Yr 9- Is there life after death?	
Atman	The essence of a being. Can refer to body, mind or soul
Samsara	Cycle of death and rebirth
Karma	Actions, and the consequences of actions.
Moksha	Ultimate goal for all atman (spirits/souls) as laid out in Hindu scripture; escape from the cycle of reincarnation.
Bhakti yoga	Devotion and developing pure love of God
Jnana yoga	A type of Hindu meditation
Atma	Sanskrit word that means soul.
Sewa	Selfless service to the community
Tan	Physical service, eg working in the langar.
Man	The mental aspect of Sewa, eg teaching the Guru Granth Sahib.
Mukti	Sikh belief/ liberation freedom of the soul

KPI6 Describe Sikh belief in the afterlife

- Sikhs believe in the cycle of **samsara** and believe that everyone has a chance to reach Waheguru in **mukti** (liberation).
- In order to reach mukti, Sikhs must live their lives with Waheguru in their mind at all times. They must also act with love and compassion towards others. Therefore, they attempt to live their lives in a God-centred way.

Sikhs believe that in order to break free from the cycle of samsara they must lead a life that is **gurmukh,** which means God centred, and not **manmukh,** which means self-centred.

"The body is the field of karma and in this age; whatever shall plant, you shall harvest." Guru Granth Sahib

KPI7 : Humanist perspectives of the afterlife

- Humanists do not believe human beings have a **soul.**
- Unlike the body, they do not see any evidence for it.
- The BHA's slogan, **'for the one life we have,'** sums up the attitude of many humanists.
- The more important question for them is not whether there is an afterlife but how we should live this life.
- Humanists also believe something of us does survive our death, so we do in a sense live on after we die, or can at least still have an impact on the world and other people. For example; atoms, genes, thoughts, works.

'Do not act as if you were going to live for a thousand years... while you are alive, while it is still possible, become a good person.' Marcus Aurelius (121 – 180)

KPI5- Explain Hindu belief in the afterlife

- Most Hindus believe that humans are in a cycle of death and rebirth called **samsara.**
- When a person dies, their **atman** is reborn in a different body.
- Hindus believe in karma or 'intentional action'.
- Many believe good or bad actions in life leading to positive or negative merit, determines the atman's **rebirth.**

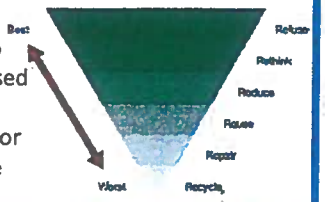
KPI5- Hindu belief on how to achieve goof merit

Most Hindus believe that good merit is achieved by following your dharma (teaching). The Bhagavad Gita details four different ways that moksha can be achieved: Karma, bhakti, jnana yoga and meditation.

Design & Technology Year 9

The 6 R's

The 6 Rs are an important checklist. They are used by designers to reduce the environmental impact of products. They can also be used to evaluate the environmental impact of other products.
The hierarchy of sustainability places the strategies that are best for the planet about those that have a greater negative impact on the environment.



1. Refuse

The first stage in the process is to ask whether the proposed product, part, purchase or even journey is required at all. Asking the question 'Is it really necessary?' can play a major role in reducing the demand on materials. Simply not using something saves 100% of what you have chosen not to use. Example include:

- Using your own carrier bag rather than purchasing a new one.
- Walking or cycling to school instead of being driven.
- Not using products such as some pesticides that are known to be harmful to the environment.
- Not eating (or using) products that are over-farmed, over-fished or on the endangered list.

2. Rethink

Consumers have a growing number of choices to make about where and on what they spend their income. Greener and more sustainable options are not always the cheapest or the best, but making informed decision and rethinking ones spending power can play a huge part in conserving resources.
Deciding on the design of a product, e.g. the materials being used in its production, will directly affect its sustainability. The types of questions designers need to ask are:

- Are the materials locally sourced?
- Are they sustainably produced?
- Is it essential to use this material, of which there is a finite supply?

By rethinking how the product is likely to be made, the product can often be redesigned in a more responsible way.

3. Reduce

Reduction is often the result of having re-thought a design or action. Materials and energy are saved due to efficient manufacturing practices and the use of clever design, incorporating sustainable materials.

- Modern materials that are lighter and stronger than traditional ones have contributed to the miniaturisation of products, saving material and energy in manufacture and use.
- Reducing the complexity or number of parts a product uses and reducing the number of different materials in a product makes recycling easier.
- In factories, schools and hotels, fitting motion sensitive lighting and smart heating systems can significantly reduce energy usage.
- Many large companies employ staff to conduct 'energy walks' to turn off unused appliances and lights and to ensure windows and doors are shut to conserve heat.

4. Reuse

Reusing products multiple times for the same purpose is also known as **primary recycling.** Reusing a product in a different way from the one it was designed for is known as **secondary recycling.**
The classic glass milk bottle is reused many times before it reaches the end of its useful life, as which point it is recycled. A plastic milk bottle, however, is intended to be used only one, although it can have many different subsequent uses.
Donating to and buying from charity shops extends the life of products and in recent years there has been a resurgence of in products having second lives, thanks to websites such as eBay, Freecycle or Gum tree.

ebay freecycle gumtree

It is also becoming popular for furniture and other household items to be **upcycled** with a coat of paint and some minor repairs or adaptations, extending their useful life by many years.

5. Repair

Being able to repair a product when it is broken or worn is a way of extending its life and delaying the purchase of a new one. Repairing is a positive option over replacement as it means that only some parts of the product are replaced. This creates jobs for skilled people who conduct repairs and stimulates a spare parts market.
Unfortunately, repairing products has become harder over years. Growing number of products are not design to be repaired. There are a number of reasons why items may be designed this way, but it is usually because they are cheaper to replace than repair. Some products, especially modern electronic products, are designed to last only a few years as technology dates quickly and older products will be superseded by newer, faster, more efficient models. This is called **planned obsolescence.**

6. Recycle

Tertiary recycling, although a very important stage, is lower down the hierarchy of preferred options because most materials that are recycled this way tend to be of lower quality than the original material. It takes a lot of energy to recycle materials.
This form of recycling requires the reprocessing of the material and in many cases involves chemicals and/or heat to recover the recycled materials. In an ideal world, tertiary recycling would remove all recyclable materials from our household waste so that only biodegradable materials would be left. Only very few parts of the world are set up to cope with this level of processing.

7. Sustainability

Our planet has to provide all of our basic human needs, such as food, shelter and warmth.
Designers now have a much better understanding of which materials are sustainable and which are not.
The general principle is that resources fall into two categories:
Finite resources – are ones which are in limited supply or cannot be reproduced.
Non-finite resources – are ones which are in abundant supply and are unlikely to be exhausted.

8. Recyclable materials

Once all useful and recyclable materials are removed, the majority of the remaining waste is organic matter and can be processed in one of two ways; **'Recover'** or **'Rot'**. Food waste and garden waste can be processed at a high temperature and turned into compost. The waste can also be buried in **landfill** sites where the resulting methane gas from the rotting matter is collected and burned and used to generate heat or electricity in the same way.

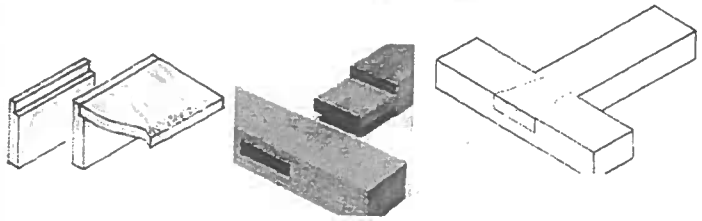
DESIGN & TECHNOLOGY

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

1.1 Wood joints



Lap Joint | Mortise + Tennon Joint | Dovetail Joint

2. Scales of Production

One off: when you make a unique item

Batch: when you make a few/set amount

Mass: when you make thousands

Continuous: open ended production

3. Adhesives

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

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

Contact Adhesive – 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.

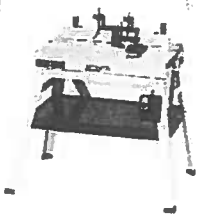
***Composite** materials* are a mix of 2 different types of material to get the best qualities from each – eg: GRP (Glass Reinforced Plastic)

5: TOOLS

Try square

Bench Hook

Vice



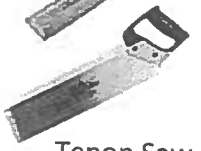
Router Table

Mallet

PVA Glue

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.**

Some examples:
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

Art - Year 9 - Term 2 - 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.

Fragmentation
The process of breaking or splitting an image.

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)
Vincent Van Gogh, a Dutch artist, strove to convey his emotional and spiritual state in each of his artworks. Van Gogh used line work and colours to express his emotions.

Frida Kahlo (1907-1954)
Frida Kahlo's life was filled with many events which inspired her work, especially her complicated relationship with her husband Diego Rivera. She was a Mexican artist and was inspired by the nature and artefacts of her homeland.

Drama Y9 Blood Brothers

Blood Brothers plot

Russell's BB revolves around twin boys (Mickey and Edward) who are separated at birth and brought up in completely different environments in the city.

The play, set in the 1960s, is divided into two acts, with songs throughout.

Mickey is brought up with his seven older siblings by his struggling single mother, Mrs Johnstone. His twin brother, Edward, however is brought up as the only child of the wealthy Lyons family, who live nearby, after Mrs Lyons persuaded Mrs Johnstone to hand over one of her twins at birth.

Mickey and Edward don't meet each other until they're seven years old, but immediately become best friends and blood brothers. The bond continues when the boys are teenagers and both live in the countryside, despite them both being in love with Mickey's neighbour Linda.

However, as they get older, the huge difference in their backgrounds pulls them apart and eventually leads to their tragic deaths.

Written during a period of huge changes in society and politics, Blood Brothers draws the audience's attention to the detrimental effect that social inequality can have on people's lives.

Useful vocabulary: Contrast Multi-role Dramatic Irony Tragedy Dole Prejudice Manipulates Consequences Vulnerable Foreboding Foreshadow Judgemental Sympathy Stigmatised Monologue Prologue Dialogue Transitions Cyclical Cautionary

Background of the play

Born into a working class family, Russell grew up on a council estate in Liverpool. His father worked very hard in a variety of jobs including mining and other laborious occupations. His mother worked as a nurse. This echoes the situations of Mickey and Linda, struggling to get by during a difficult period. His plays largely focus on the problems faced by working class people. He writes a lot about social divides and how someone's class can affect who they are and the opportunities they are given.

Liverpool depended heavily on traditional industries, so it was badly hit by the industrial decline in the late twentieth century. The city's working-class areas were very poor and things went from bad to worse. Margaret Thatcher was Prime Minister at the time and was arguably to blame for some job losses.

There was a large gap between working and middle class in Britain, even before the industrial decline. The Johnstones and Lyons' are class stereotypes. A lot of working class people struggles finically, even if they were in work or on the dole. The Middle class were largely unaffected by the industrial decline, as they had jobs like teaching or accountancy. There was also a class divide in education, whether you went to a public and private schools often decided your job in the future

Families were expected to have a 'nuclear' structure- a mother, a father and their children. Single-parent families like Mrs Johnstone were less common and were frowned upon by many.

Key Terms

Foreshadowing - Warning or indication of a future event
Pathos - Appeal to emotion
Multi-role- One actor playing a two or more roles
Motif- A repeated idea throughout the story
Dialogue - Conversation between two or more characters
Tension - Dramatically used to build suspense
Humour - Language used for amusing/comic effect
Dramatic Irony - When the audience know something that the characters do not
Songs - Contain lyrics that are set to music to give audience more information
Stage Directions - Instructions indicating how the actor should move/speak
Cyclical Structure - Finishes a similar way to how the text began
Prologue - A separate introduction that reveals some of the plot
Atmospheric - A distinctive mood/feel to the scene
Parallels - Similarities in the text—almost a replication of events
Tragedy - A play dealing with tragic events and having an unhappy ending for main characters.

Acting Style

Epic Theatre is a technique used in theatre created by Bertolt Brecht to remind the audience the were not watching real life.

Narration is a technique used by break to remind the audience what they are watching is just a play and not real life. This is shown throughout Blood Brothers as their is a character called, 'Narrator.'

The Narrator constantly, 'Breaks the Fourth Wall,' another Epic theatre technique. They do this by talking directly to the audience and asking them questions about what is happening in the performance.

A third technique we see used in Blood Brothers is Multi-Rolling. This is a technique where one actor will play more than one character or more than one actor will play the same character. This reminds the audience that these characters are not real and that they are watching something that is not real life.

The final Epic Theatre technique that is used is Songs. Although Blood Brothers is not a musical it does have songs which again remind the audience that what they are watching is not real life.

Drama - Base work

Five Key Acting Skills

Facial Expressions - How can we show emotions through our faces? Eye contact, eye brows, straight, emotions, gritting teeth, tense, relaxed, wrinkled, creased, staring, twitching.

Voice - How can we use our voice in performance? Tone, pitch, pace, emotion, volume, projection, dialogue, dialect, accent, intonation, whistling, SFX, interjection.

Posture - How can we use our bodies to help us create performance? Posture, blocking, positioning, front on, side on, emotions, age, open or closed.

Gestures - These are movements with meaning, how can we use them in performance? Hands, arms, speed, clicking, rubbing, waving, mannerisms.

Movement - How can movement be used to create performance? Speed, pace, acceleration, gait, mannerisms, special awareness, stage presence.

Key Terminology

Script - The written words and stage direction which are spoken and performed in a play. A script will be written by a writer and then given to a director to create a performance.

Director - This is the person who is in charge of the actors and performers. The director will tell the actors how they want them to perform and move in each scene. They will block the performance.

Blocking - When creating a performance you must first plan where all the actors are going to be standing and moving to on the stage. You must also plan what set and props are going to be used in your performance. This is called Blocking.

Stage Direction - Text in a script which tells you what you need to be doing while performing. Some scripts may have more stage directions than others. Some directors may also decide not to ue all of the stage directions because they have their own ideas for what the performers should be doing.

Characterisation - Using a variety of skills, improvisation techniques and background information to become your character. These skills are your 5 key acting skills. It is important you fully understand the character you are performing. You MUST remember, you are no longer yourself when acting. You become someone else.

Performance Discipline - Maintaining extremely high and professional levels of focus and concentration throughout rehearsals and performance. This involves being on task at all times, not laughing or giggling when you are acting. It is crucial to stay focused when performing.

Ensemble - A group of performers all working together in a performance.

Freeze Frame - When a scene 'freezes' for a moment to allow the audience to really explore the moment. It is like pressing pause on live action.

Tableaux - A collection of still images which create a performance. It is like looking through a photo album.

Immersive theatre - Audience are included in the performance but don't know what is going to happen. Actors my talk to or ask the audience questions about what is happening in the performance.

Example Self-evaluation

STRENGTH During my performance, I wanted to show how my character was really angry with another character. To do this, I scrunched my eyebrows together and tilted my head slightly forward, using facial expression to show my annoyance. I also had a very big frown and narrowed whilst making a low pitched noise to display my frustration. This was successful because the audience could clearly see how angry my character was when seeing their friend after having an argument.

AREA FOR IMPROVEMENT During my performance, I wanted to show how my character was really happy to see someone. To do this, I slowly waved my hand and had a slight smile on my face whilst quietly saying 'Hello' in a soft tone. My intention was to show how I was happy but wanted to show it in a subtle way. However, the audience were confused by this and thought that my reaction was too small. If given the chance to perform this moment again, I would make my gestures much bigger, my movements quicker and my facial expressions much more exaggerated so that the audience can see my excitement much more clearly.

Stanislavksi - *Naturalism*

The System' (or 'The Method' in the US) is a systematic approach to training actors that the Russian theatre practitioner Konstantin Stanislavski developed in the first half of the 20th century. Stanislavski was the first in the West to propose that actor training should involve something more than merely physical and vocal training.

A pioneering actor and director who brought naturalism to the stage.

He believed that actors should research their scripts and relate to motivations by delving into their own emotions.

Co-founder of the Moscow Arts Theatre, Stanislavski created the first acting training programme called 'The System'.

It is a set of techniques used by actors to portray emotions on stage by putting themselves in the place of the character.

Firstly, the actor would have to enter the rehearsal or performance space with an open frame of mind and leave their personal issues at the door. They would then have to warm up and ensure that they are fully relaxed, ready to work. Only then would they begin to follow 'The System'.

Skills	Aspects of skills
Facial Expressions	Eye contact, eye brows, straight, emotions, gritting teeth, tense, relaxed, wrinkled, creased, staring, twitching.
Voice	Tone, pitch, pace, emotion, volume, projection, dialogue, dialect, accent, intonation, whistling, SFX, interjection.
Body language	Posture, blocking, positioning, front on, side on, emotions, age, open or closed.
Gestures	Hands, arms, speed, clicking, rubbing, waving, mannerisms
Movement	Speed, pace, acceleration, gait, mannerisms, special awareness, stage presence.

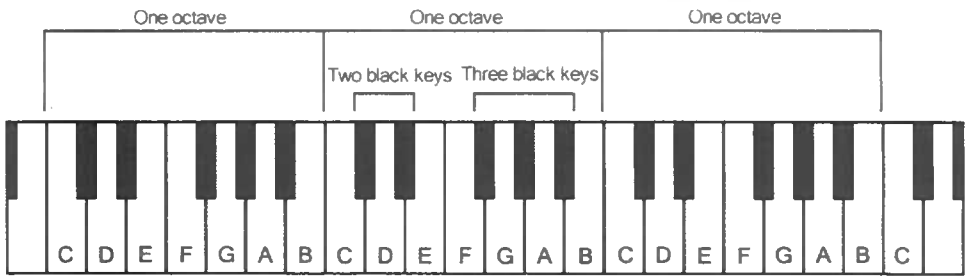
Stanislavski's System *The following is a non-exhaustive list of steps used by Stanislavski when training actors.*
Physical actions - putting gestures to lines/words.
Subtext - understanding hidden meanings in text.
Magic IF - imagining circumstances.
Objectives - what does the character want to achieve in the scene?
Super objective - what does the character want to achieve by the end of the play?
Through line - identifying the actions of each character on and off stage.
Given circumstances - identifying facts/information from directly from the text.
Emotional memory - highly dangerous psychological method of demonstrating emotions.

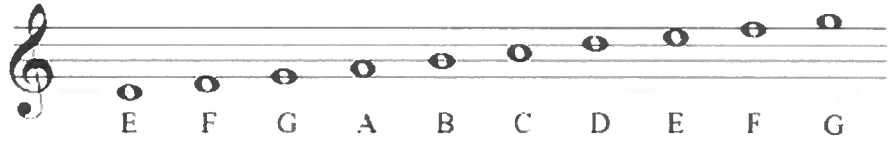
Terminology	Definition
Interpretation	Finding the meaning/action within a script
Stage directions	Guidelines/hints for actors within a script
Blocking	Where actors are positioned on stage
Proxemics	How close actors are on stage
Semiotics	Study of words and symbols
Characterisation	Skills used to create a character
Given circumstances	Stanislavski technique - looking at the script, what do we definitely know to be fact?
Status	The amount of power/dominance each character has over others
Levels	How high or low your body is positioned
Long term targets	What do you want to achieve by the end of this unit?
Short term targets	What do you want to achieve within the next few rehearsals?
Physical skills	Everything you can do with your face, hands, movement and body.
Vocal skills	Everything you can do with your voice— be specific with terms.
Interpretive skills	How well you interpret a script or a character. How do you become the character?

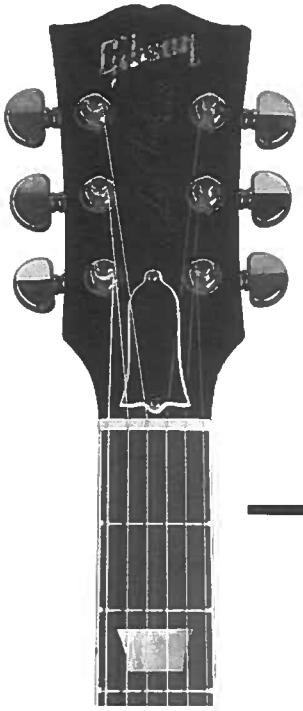
MUSIC - The Elements of Music

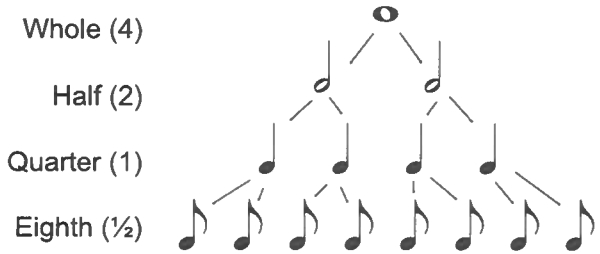
Key Terminology

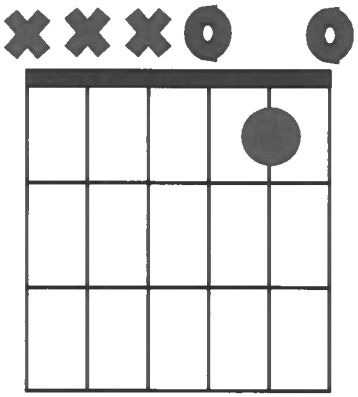
Conductor - A person who directs the performance.
Note - A singular sound.
Chord - A group of three or more notes played at the same time.
Harmony - Different notes played or sung together.
Melody - A small arrangement of notes that make a tune.
Scale - A series of eight notes starting somewhere between 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...***

PCSHE – Year 9 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 Porn**: 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

- 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.

Unhealthy Relationships

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 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

PCSHE – Year 9 Healthy Lifestyles

KPI1: Key Terms:

1. **NHS (National Health Service):** The NHS is the public healthcare system in the United Kingdom. It provides medical services, including doctors, hospitals, and prescriptions, to residents for free or at a reduced cost.
2. **Decay:** Decay refers to the gradual damage or deterioration of something, such as a tooth, due to the action of bacteria or other factors.
3. **Wisdom Teeth**: Wisdom teeth are the third set of molars that typically emerge in a person's late teens or early twenties. They can sometimes cause dental issues and may need to be removed.
4. **Root Canal Treatments:** A root canal treatment is a dental procedure used to repair and save a badly damaged or infected tooth by removing the pulp and cleaning and sealing the inside of the tooth.
5. **Veneers:** Veneers are thin shells made of porcelain or composite material that are placed over the front surface of a tooth to improve its appearance, such as covering stains or chips.
6. **Crowns:** A dental crown is a cap that is placed over a damaged or weakened tooth to protect it and restore its shape and function.
7. **Braces:** Braces are orthodontic devices used to straighten and align teeth. They consist of brackets and wires that gradually move teeth into their desired positions.
8. **Teeth Whitening:** Teeth whitening is a cosmetic dental procedure that involves the use of bleaching agents or other methods to lighten the color of teeth and make them appear whiter.
9. **Cosmetic Dentistry:** Cosmetic dentistry is a branch of dentistry focused on improving the appearance of teeth and smiles through various treatments and procedures.
10. **Consensus:** Consensus means general agreement or the collective opinion of a group of people on a particular matter or issue.
11. **Vigorous:** Vigorous means doing something with a lot of energy, force, or intensity. It's often associated with activities that require physical effort.
12. **Processed Meat:** Processed meat is meat that has been modified through various methods, such as smoking, curing, or adding preservatives. Common examples include sausages and bacon.
13. **Bowel Cancer:** Bowel cancer, also known as colorectal cancer, is a type of cancer that begins in the colon or rectum. It can be serious and requires medical treatment.
14. **Allergies:** Allergies are the body's adverse reactions to substances like pollen, certain foods, or pet dander. Allergies can lead to symptoms such as sneezing, itching, or hives.
15. **Influences:** Influences are factors or people that have an effect on your thoughts, behavior, or decisions. They can come from various sources, like friends, family, or the media.
16. **Depression:** Depression is a mental health condition characterized by persistent feelings of sadness, hopelessness, and a lack of interest in activities. It can affect a person's overall well-being.
17. **Fatigue:** Fatigue is a state of extreme tiredness or exhaustion, often resulting from physical or mental exertion.
18. **Immune System:** The immune system is the body's natural defense mechanism that helps protect against infections and diseases. It consists of various cells and organs that work together to keep the body healthy.
19. **Stimulant:** A stimulant is a substance that increases alertness, energy, and attention. Some common stimulants include caffeine and certain medications.

KPI2; Healthy Sleep

What can cause problems with our sleep?

Medical issues, technology, hunger, stress, mental health issues, your bed, clutter and messy rooms, napping and lie ins

Consequences of sleep deprivation:

- **Emotional Affects**: Irritability, mood swings, fatigue / tiredness, lack of motivation, depression
- **Physical Affects:** High Blood Pressure, Reduced Sex Drive, Lower Immune system, Disrupt hormone regulation, Higher risk of type 2 diabetes
- **Cognitive effects:** Forgetfulness, Clumsiness, Difficulty focusing

KPI3: Tips for a good night's sleep:

- Routines – set a routine which your body can recognize is a wind down for sleep.
- Tech free bedrooms – stop using technology such as tablets and phones 2 hours before bed or use a blue light filter.
- Clutter free bedrooms – Keeping your bedroom clutter free and tidy and help make the room feel calmer and more relaxing.
- Reduce stimulant food intake – foods and drinks which contain a lot of sugar and caffeine can impact your sleep so try not to consume too much after 3pm.

PCSHE – Year 9 Healthy Lifestyles

KPI3: Choices about Diet and Exercise

What influences choice about diet and exercise:

Family, friends, celebrities, media, social media, NHS guidelines, advertising campaigns.

Facts:

- The NHS recommends five portions of fruit and vegetables a day.
- Eating too much of anything can be bad for health and highly processed meats can have a negative health effect, for example the Department of Health and Social Care suggest that there is a chance that consuming processed red meat can increase the risk of bowel cancer
- Children and young people (aged 5-18) should engage in moderate-to-vigorous intensity physical activity for an average of at least 60 minutes per day across the week. This can include all forms of activity such as physical education, active travel, after-school activities, play and sports

Diet:

There is a general consensus that there are some foods people should eat more of/choose more often:

- Fruit, Vegetables, Beans, Pulses, Eggs, Fish, Other protein

There is a general consensus that there are some foods people should eat less of/choose less often:

- Foods high in salt
- Foods high in sugar
- Highly processed food

Some people might also follow very specific diets for medical reasons, under the guidance of a health of a professional. For example, some people are unable to eat certain foods due to allergies, such as to gluten, or peanuts.

KPI 4: Dental Health

Cosmetic versus dentistry for health

1. Dental check-ups, fillings to treat decay, the removal of decayed teeth or wisdom teeth and root canal treatments are all examples of dentistry for health.
2. Veneers and the replacement of existing amalgam fillings with white fillings are usually cosmetic treatments. Amalgam fillings do sometimes need replacing if there is decay underneath them or if they are defective, however if amalgam fillings that are in good condition are replaced this may provide unnecessary risk to the tooth as additional healthy tooth will be drilled away in the process. Similarly, veneers require the filing down or cutting away of part of the tooth in order to be applied, it is an irreversible process and veneers can require replacement due to cracking, wearing down or loosening.
3. Braces, crowns, scale and polish treatments and whitening treatments are sometimes cosmetic procedures but are also sometimes treatments covered by the NHS as part of dentistry for health.

Treatment:

- You are entitled to free NHS dental care until 19 and in full-time education. However, cosmetic procedures will incur a cost that is not covered by the NHS.
- The only safe place to receive cosmetic treatments is from a qualified dental professional. Tooth whitening from beauty therapists, for example in spas or clinics, is illegal and can cause major damage to the mouth.

If you need further support...

- Safeguarding team – Mr Ogden, Mrs Jones, Mrs Loveridge, Mrs Aston, Mr Hayward
- Parents/Friends
- Tutor/Teachers
- Outside organisations:
- NHS Eat Well: https://www.nhs.uk/live-well/eat-well/
- British Nutrition Foundation: https://www.nutrition.org.uk/healthyliving/lifestages/teenagers.html
- The Oral Health Foundation www.dentalhealth.org 01788 539780
- NHS Choices: www.nhs.uk
- NHS Change4Life Sugar Smart: www.nhs.uk/change4life/food-facts/sugar
- NHS Under-18s guide to quitting smoking: www.nhs.uk/live-well/quit-smoking/quitting-smoking-under18s-guide
- Dental Trauma UK: www.dentaltrauma.co.uk (for further information on knocked out teeth)

Year 9 Unit 3 -Games programming in scratch

Lesson 1

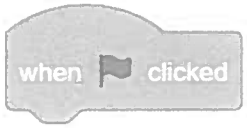
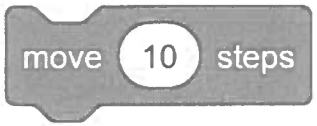
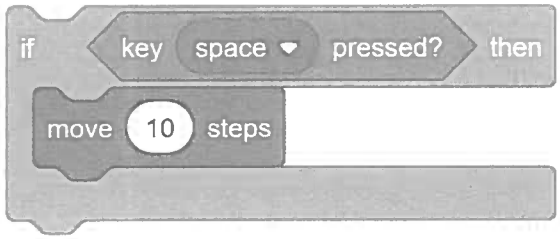
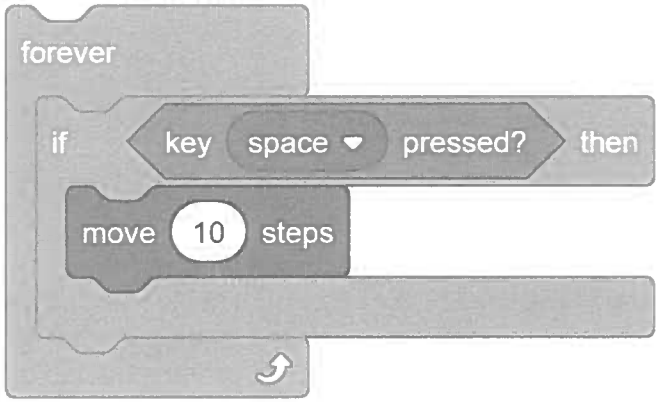
What is scratch?

Scratch is a visual programming environment that allows you to program using draggable blocks

Describe what an algorithm is and why it is important to follow instructions in order.

An algorithm is a set of step-by-step instructions to resolve a problem. Instructions need to be followed in order to ensure the problem is resolved as expected.

Be able to describe some key features of scratch

Events for start flag and key presses	
Movement by a number of steps or in a particular direction	
If conditions 	Infinite loops (using a forever block) 

Scratch
Scratch is a visual programming environment

Algorithm
A set of step-by-step instructions to resolve a problem

Variable
A device used to store data while a program is running

Sprite
Sprites are objects that appear above a backdrop (background)

Costume
Costumes allow a sprite to change its appearance

Concurrency
Running two or more sets of code at the same time

Platform game
Platform games allow the player to control a character in the game

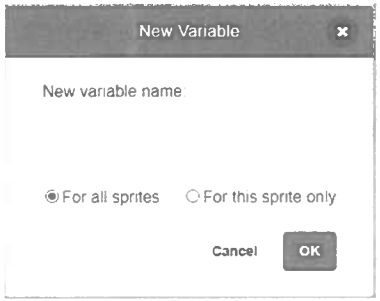
Game objectives
What needs to be achieved in the game in order to win.

Lesson 2

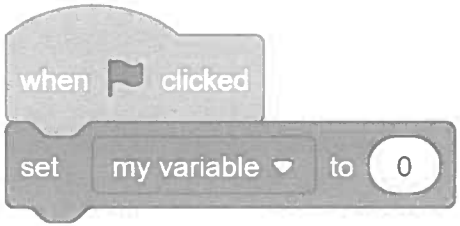
Describe the purpose of variables.

A variable is used to store data for later use.

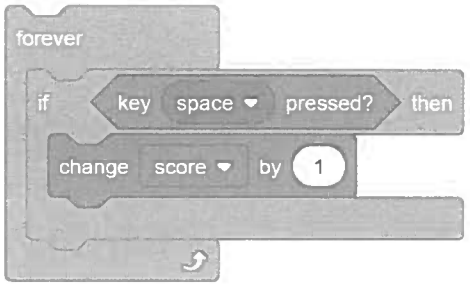
Creating new variables



Setting the value in a variable



Changing the value in a variable



Explain how to change a sprite's appearance by using costumes

Each sprite can have a set of different appearances. These are called costumes. Each costume can be edited.

Be able to move sprites to specific locations

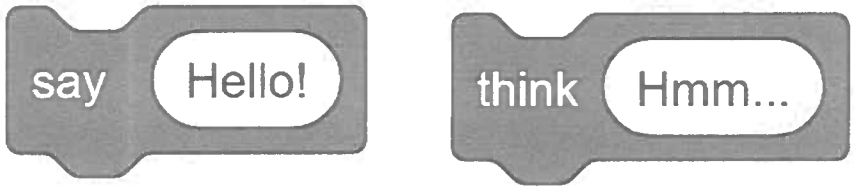
Lesson 3

What is concurrency?

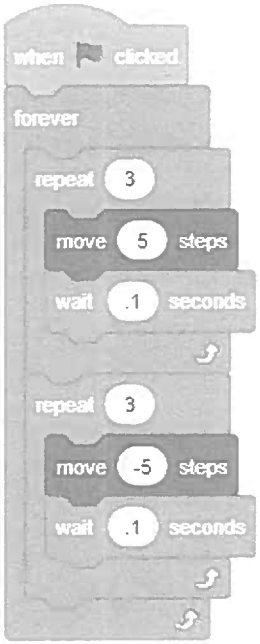
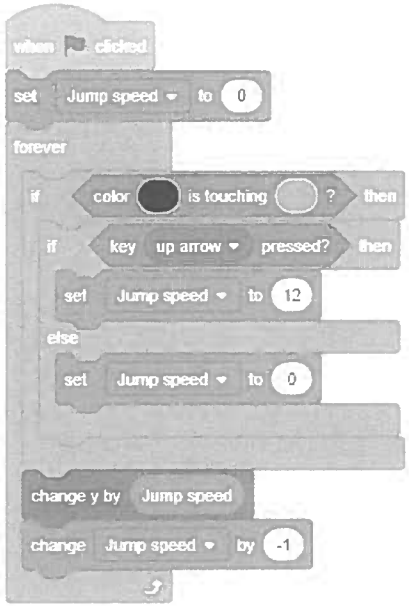
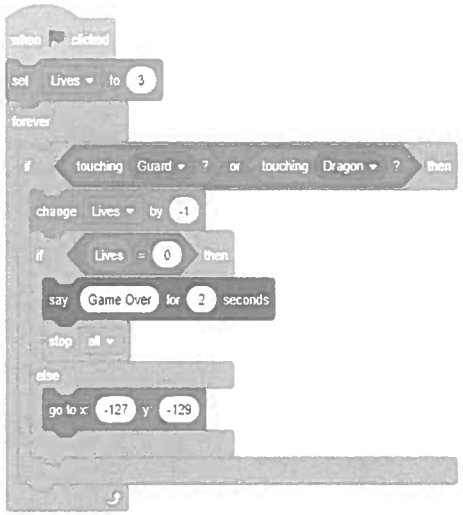
Concurrency means running two or more sets of code at the same time

Explain how to use broadcasts to send messages and start other parts of code working

Be able to output text in the program using say or think blocks

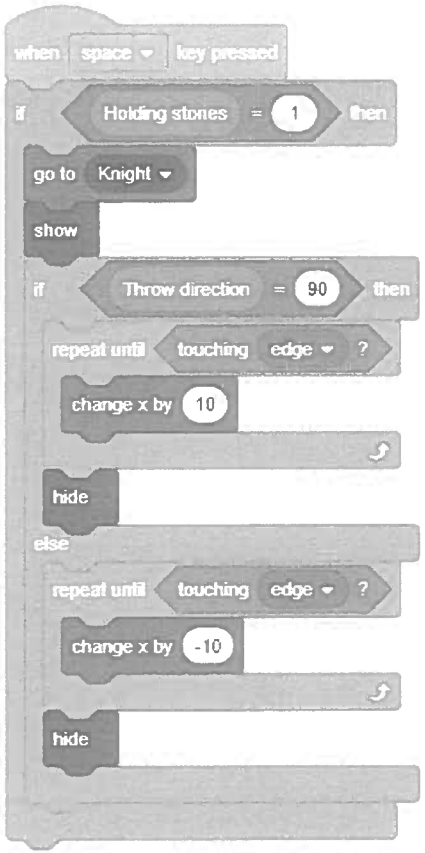


Lesson 4	**What is a platform game?** Platform games allow the player to control a character in the game • The character is moved along platforms • They are also able to jump **What is a player sprite?** A player sprite is a sprite that the player controls. **What is an enemy sprite?** A sprite that the player must avoid or destroy.	
Lesson 5	Be able to program the following features into a platform game.	

Automatically move enemies	Make the player jump	Touching enemies loses a life.
		

Lesson 6	Understand how objects such as keys are collected using variables	

Be able to make interactions occur only when certain objects are collected



Understand how projectiles can be thrown or fired at an enemy