

WILMINGTON
GRAMMAR SCHOOL FOR BOYS

Knowledge Organisers

Year 9 – Term 1

Name	
Form group	

The knowledge organisers in this booklet are full of the **essential facts** and **information** that you need to know and be able to recall in order to 'master' Term 1's units/topics in your subjects.

To achieve this, you will need to take in the facts and information and work at moving it all from your short to long-term memory.

We have included the reminder about how to self-quiz, our existing 'Making Knowledge Stick' techniques and a couple of new ones to try out.

Good luck in your learning,

Miss Price

Assistant Headteacher in charge of Teaching and Learning

Knowledge is Power

How to self-quiz: A Reminder!



READ

Read the specific facts/information you have been asked to focus on



SAY

Say it in your head/out-loud (if you are at home and would like to)



COVER

Cover the section of your knowledge organiser



WRITE

Write out everything you can remember from what you have read and said to yourself



CHECK

Check over what you have written – check every word.

If you have everything correct, tick your work with a green pen.

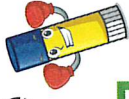
If you have made mistakes in word choice or spelling or have left words/information out, use the green pen to correct your work: This will help you identify the gaps in your knowledge and what you must spend time going over.

Repeat the process until you are able to write out all the facts/information, making no errors. We recommend at least 30 minutes in order to achieve this.

For an example of self-quizzing in action, please see the following instructional video:



Making knowledge stick!



Get a family member/friend to test you (remember - word for word; number for number!)

Focus and be positive - say to yourself you can learn what you've been asked to/want to learn, because you can! It is proven that this makes a difference as you're more receptive to the knowledge going in!

Make flash cards (for example, have the term on one side and the definition on the other.) Please see this video that shows you how you can effectively use them over the course of a week or set amount of time to embed knowledge:
<https://www.youtube.com/watch?v=C20EvKtdJwQ&t=87s>

Test yourself a lot - in all these ways and self-quizzing. When you do so and answer incorrectly, not only are you more likely to remember the right answer after you look it up... you'll also remember that you didn't remember. (Getting something wrong is a great way to remember it the next time, especially if you tend to be hard on yourself.) That's why you need to start early and do little and often, and keep retrieving the same and old knowledge!

Say the words, definitions, formulae etc. **OUT-LOUD:** This turns you from passive to active in the learning process.

Research shows that producing words aloud during study, relative to simply reading them silently, improves explicit memory.

Incorporate mnemonics (patterns of letters, ideas, or associations which assist in remembering something) to **recall longer strings of information:** e.g. My Very Excellent Mother Just Served Us Noodles (or Nachos) = The planets in order: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune

Build a '**MEMORY PALACE**' (also known as method of loci; memory journey and mind palace technique): This memory aid was created thousands of years ago by the ancient Greeks. It's used by world record-holding memory champions (and Sherlock Holmes!) With a little planning and practice, you can build a memory palace, too. *Please see this video of a man helping an 8 year-old boy to know all the US presidents using this technique!*
https://www.youtube.com/watch?v=aT7_g2E3q3Q&t=452s

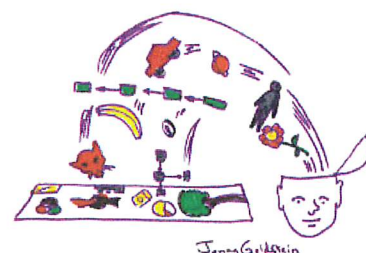
Chunk your learning - **DON'T** leave it until the night before it's due (if you do, you may know it a bit and be able to recognise the words, phrases and equations etc. But they won't be committed to memory.) Start early and do little and often; distributed practice is much more effective!

Two others for us to try out!

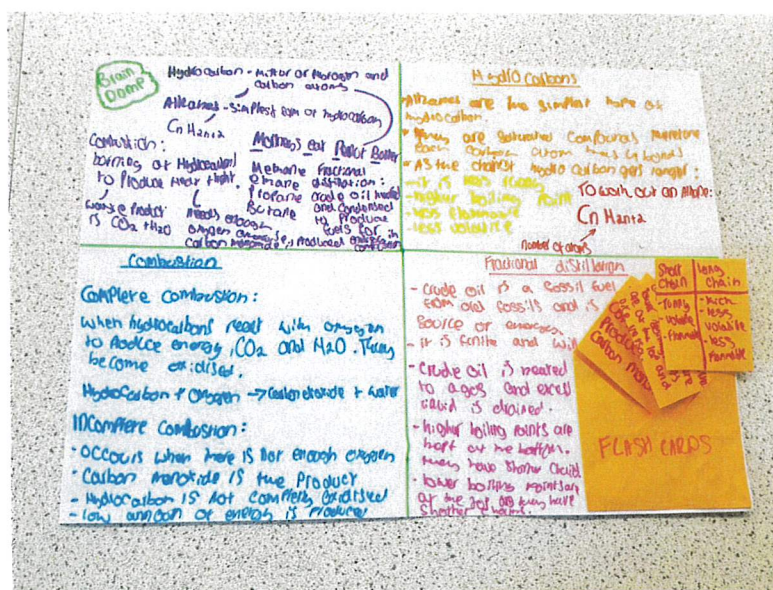
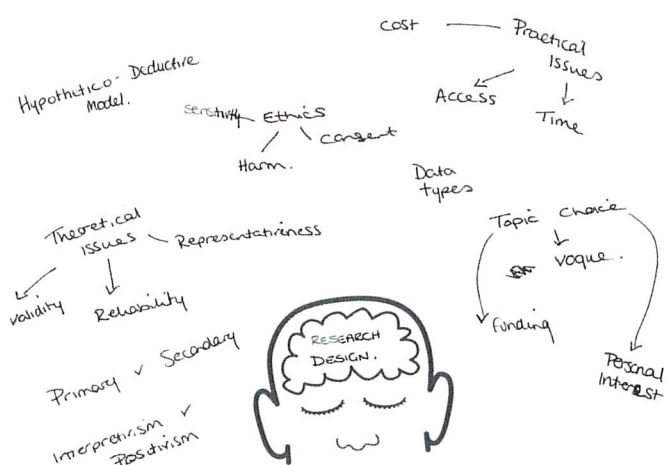
After self-quizzing and employing different techniques to move your essential facts and information into your working and then long-term memory, put your knowledge to the test with a... **Brain Dump!**

How?

- Take a blank piece of paper
 - Write down (DUMP!) everything you know about the topic
 - No books
 - No notes
 - Be as messy as you like
 - Time limit of 2 minutes
 - After, put a star next to the things you think will be useful to revise.
 - If you are unsure of anything you have written, try to explain each term or concept to someone and if you cannot then you need to revise it.
 - Use your notes to identify areas you have not included in your brain dump. These should be revised too!
-
- Once you have your brain dump you should be able to elaborate on the content, being able to describe and explain things in detail.
 - You should be able to make connections amongst the ideas.
 - You should identify anything you cannot explain or have missed.
 - You will want to go back and self-quiz and use our other techniques to help you to embed and retrieve the knowledge you have difficulty remembering or explaining or that you did not add to your original brain dump!



Examples of brain bumps:



Here students have 'brain dumped' and then created revision resources (flash cards) to master content



Mind Maps!

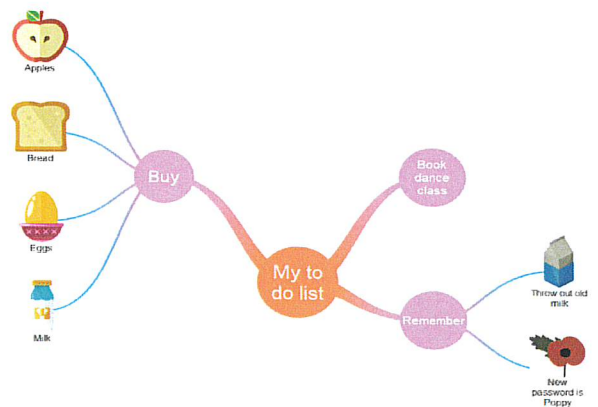
How?

- Put the topic in the centre of a blank page
- Add big branches with the main ideas/themes of the topic
- Add small branches to these with more detail
- Try to write only 1 or 2 words per branch
 - Focus on the key points only
- Add an image to each branch (dual code*):



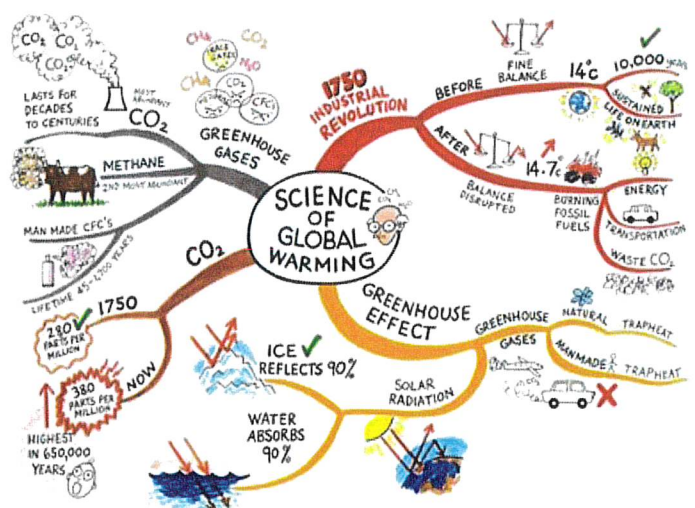
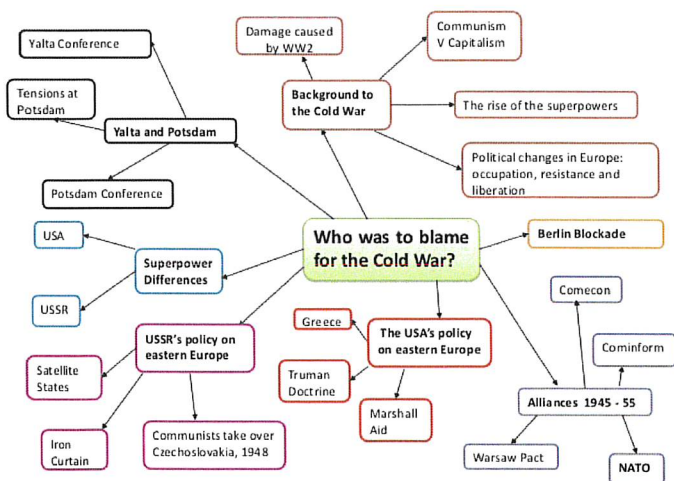
!!!The more creative, the better! Mind mapping can benefit memory retention when we create maps that involve association... The more imaginative and tailored an idea is to an individual, the more it will benefit their memory!!! ... As a simple example, let's work to remember a small 'to do' list:

- Buy apples
- Throw out old milk
- Remember the Internet password is now 'Poppy'
- Book a dance class



To help them remember items on their list, the individual who has created this mind map uses a picture of a 'Pink Lady' apple as a retrieval cue (trigger) because these are their favourite. Furthermore, the individual needs to remember that they have changed their password to 'Poppy', as another cue (trigger), so uses a picture of a remembrance poppy.

More examples of mind maps:



Top tips!

- 1) ! Use different colours for each branch of your mind map. This helps your brain distinguish between each of the different information stems.
- 2) ! Use 'dual coding'* in your mind maps. Dual coding means using both words and images to record the information you need to remember.



WGSB Art

Yr 9 Knowledge Organiser Term 1 & 2



Stephen Wiltshire Facts

Stephen Wiltshire is an artist who draws detailed cityscapes.

Stephen was born in London, United Kingdom to West Indian parents on 24th April, 1974.

As a child he was mute, and did not relate to other people. Aged three, he was diagnosed as autistic. He had no language and lived entirely in his own world.

Stephen started drawing at the age of five and sold his first work to the Prime Minister of the United Kingdom at the age of eight.

Sir Hugh Casson, President of London's Royal Academy of Art, referred to him as the best child artist in Britain.

He learned to speak fully at the age of nine.

His only has to look at a view for a few minutes then he can draw it all from memory

He travels and exhibits all over the world

He continues to draw every day and his motto is 'Do the best you can and never stop'.

SUNGA PARK FACTS

Birthplace	South Korea
Current home town	Bangkok, Thailand
Training	She is self taught
Profession	Artist/Illustrator
Skills	Cell animation, web design, character design, flash animation, editorial design, graphic design, illustration.
Interests	Travel, architecture, portraits
Countries visited	Croatia, Scotland, Belgium, Morocco, India, France, China, Czech Republic,
Materials used	Watercolour, oil paint & pen
Concepts in her work	She feels that being able to travel all over the world is like a dream, which is why her architectural works represent dream like memories of the places she has visited.
How she uses colour	She chooses colours based on how well they go with each other and tries to avoid following the realistic colours of architecture.
How she uses materials	She uses washes of paint (a wash is a thin watery layer of paint) and fades the images out softly. She uses pen in an illustrative style to add details.

Career: Illustrator

Graduates can work in many different areas, particularly within the creative arts and design sector. Employers include advertising and marketing agencies, publishers, and graphic design, web design or animation companies. Most illustrators are self-employed and generate their own work based on client needs.

<https://nationalcareers.service.gov.uk/search-results?SearchTerm=illustrator&JobProfileUrl=architect>

Career: Architect

Architects design new buildings and the spaces around them, and work on the restoration and conservation of existing buildings.

<https://nationalcareers.service.gov.uk/job-profiles/architect>



HUNDERTWASSER FACTS

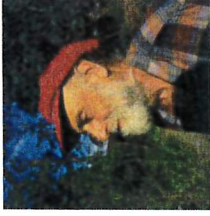
Born in 1928 in Vienna, Austria, and died in 2000 on board the QE2 ship at sail in the Pacific

He referred to himself as a painter, architecture doctor, ecological activist and philosopher.

He was fascinated by spirals, and called straight lines "godless and immoral" and "something cowardly drawn with a rule, without thought or feeling" He once said "The straight line leads to the downfall of our civilisation"

Hundertwasser first achieved fame for his boldly-coloured paintings, but he is more widely known for his individual architectural designs.

At the centre of his ecological activities were tree planting and greening campaigns, the restoration of natural cycles, the protection of water and the fight for a waste-free society.



Watercolour tin
Water soluble solid tablets of colour



Fineliner
A fine nibbed pen for detail drawing



Fine felt pen
A fine felt pen this is useful for creating soft 'washy' lines

Year 9 Business and Finance

Personal budgets and spending choices

Consumer spending: Spending by ordinary people.

Infrastructure: The important physical systems of a nation – for example, transport, communication, water and sewage, and power.

Non-essential spending: Spending on items that we want, but which are not essential to surviving. Examples would include holidays and luxury items such as an iPad.

Unexpected spending: When a need to spend arises that was not expected; not emergencies, but times when there is a need to buy or pay for something that wasn't planned for in advance.

What can affect a budget?

Bank rate (or base rate): The interest rate set by the Monetary Policy Committee (MPC) for the Bank of England to lend to UK banks.

Bureau de change: A currency exchange business, where people go to exchange one currency for another.

Central bank: The institution responsible for managing a country's currency, interest rates and the supply of money in circulation.

Consumer Prices Index (CPI): The official government measure of UK inflation.

Currency: The money used in each country. For example, the UK currency is the pound and the US currency is the US dollar.

Currency falls (or weakens): The currency will buy less of another currency than before.

Currency rises (or strengthens): The currency will buy more of another currency than before.

Deflation: Prices fall over time.

Exchange rate: The amount of one currency needed to buy another currency or to pay for something in another currency.

Fixed rate: The provider fixes the interest rate at the start, either for the whole term of a loan or for an agreed period.

Foreign exchange market: A global system for central banks, banks, large financial organisations and large investors to exchange currencies.

Inflation: General increases in the price of goods and services overtime.

Interbank exchange rate: The rate at which banks will exchange currencies with each other.

Monetary Policy Committee (MPC): Part of the Bank of England that is responsible for controlling UK inflation and setting interest rates.

Real rate of return: The savings interest rate minus inflation.

Tourist

Exchange rate: The rate offered to people wishing to exchange currency at a bank or bureau de change. It will be lower than the inter bank exchange rate (see above).

Key Words and Phrases

Input - Data that is being put into the computer

Output - The result of processed data that we can see through some other devices

CPU - A circuit that performs all of the calculations needed to run the computer

RAM – Short-term memory, where the data that the CPU is currently using is stored

BIOS – Instructs the computer on how to start up the computer

Peripherals – A hardware device that provides input or output for the computer. Not essential.

Operating System - Software which supports a computer's basic functions. Managing computer hardware and software.

Open-Source Software - Applications that are designed to be publicly accessible without payment

Proprietary Software – Software that is copyrighted and has limits against use, distribution and modification

Utility Software – Helps to maintain the computer system

Secondary Storage – non-volatile long-term storage. Used to hold data and programs when the computer is not in use

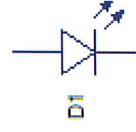
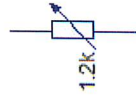
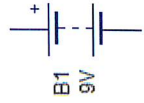
Ethical Issues – Principles or rules which govern a person's attitude and behaviour. This includes ensuring public safety and security of data

Legal Issues – Computers being unlawfully used, leading to constant concerns and crimes.

Environmental Issues – How the manufacturing and use of computers has a negative impact on the environment

YEAR 9 ALARM KNOWLEDGE ORGANISER

Keyword	Definition
Proton	a stable subatomic particle occurring in all atomic nuclei, with a positive electric charge equal in magnitude to that of an electron.
Electron	a stable subatomic particle with a charge of negative electricity, found in all atoms and acting as the primary carrier of electricity in solids.
Current	a flow of electricity which results from the ordered directional movement of electrically charged particles
Potential Difference	Potential difference is the difference in the amount of energy that charge carriers have between two points in a circuit
Resistance	Resistance is a measure of the opposition to current flow in an electrical circuit. Resistance is measured in ohms, symbolized by the Greek letter omega (Ω)
Ohm's Law	a law in electricity that states that the current in a circuit is equal to the potential difference divided by the resistance of the circuit.
V = Volts	The unit of measurement for voltage
I = Amps/Amperes	The unit of measurement for current
R = Ohms	The unit of measurement for resistance
Push to Make Switch	A Push to Make Switch is a type of electrical switch where the connection inside the switch is wired to be normally open. When the switch is compressed the connection is made which allows the electricity to flow and the device the switch is connected to switch "on".
Buzzer	An electrical device that makes a buzzing noise and is used for signalling.
LED - Light Emitting Diode	LED stands for light emitting diode. LED lighting products produce light up to 90% more efficiently than incandescent light bulbs.





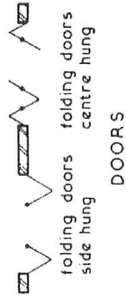
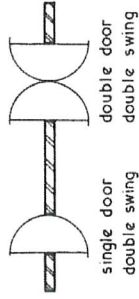
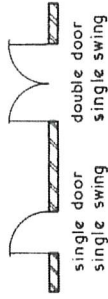
Keyword	Definition
Aeration	Incorporating air into a mixture to give a light fluffy texture
All-in-one	A method of cake making where all ingredients are mixed together at the same time
Beating	This is the rigorous mixing of ingredients using a wooden spoon, electric whisk, food mixer or food processor to thoroughly combine ingredients and to incorporate air
Binary fission	Process by which bacteria replicate and multiply.
Bridge hold	Creating an arch over the ingredient with your hand so the knife can fit underneath to safely chop ingredients
Buttercream	A soft, pipeable or spreadable mixture of butter and icing sugar used as a filling or topping for a cake.
Coating	One of the functions of eggs where they are used to stick flour or breadcrumbs to an ingredients such as fish or chicken.
Choux pastry	A cooked paste or light dough containing eggs, water, butter, and flour that puffs up when baked into a nearly hollow shell
Claw grip	A chopping techniques where your fingers are curled inward and gripping the food with the fingernails, the side of the knife blade should rest against the knuckles, used for slicing ingredients
Coagulation	The change in the structure of protein from a liquid form to solid or a thicker liquid, brought about by heat, mechanical action or acids
Core cooking temperature	The temperature at which foods need to reach in order to be cooked thoroughly. It should be over 75 °C and measured at the thickest part of the food.
Creaming	Mixing butter and sugar together on a moderately high speed until well blended, fluffy and pale yellow., it is often the first step in a cake recipe before the other ingredients are added.
Cross Contamination	The process by which bacteria are transferred from one substance or object to another, with harmful effect. Transferring bacteria from raw to cooked food is the cause of most infections.
Danger Zone	The temperature range with which bacteria multiplies rapidly (5°C -63°C)
Food Hygiene	The conditions and measures necessary to ensure the safety of food from production to consumption
Food poisoning	Illness caused by bacteria or other toxins in food, typically with vomiting and diarrhoea.
Gelatinisation	When starch particles swell and burst, thickening a liquid
Grilling	A form of cooking that involves dry heat applied to the surface of food, commonly from above or below
Hot holding	The process of keeping the cooked food at a safe temperature while it is ready for service
Macro nutrients	The nutrients we need in larger quantities, these include fat, protein and carbohydrate
Micro nutrients	The nutrients we need in small quantities these include vitamins and minerals
Pathogenic bacteria	Bacteria which causes disease, unlike many bacteria which are harmless and often even beneficial to health. Common food borne bacteria include Shigella, Campylobacter and Salmonella
Personal Hygiene	Ensuring people are clean and ready to handle food in order to avoid any form of contamination
Piping	To squeeze a pastry bag in order to force frosting or other paste-like mixtures through the tip of the bag for the purpose of decorating or creating special shapes.
Raising agent	A substance added to a food product that makes it rise when cooked
Rubbing in	To coat flour grains with fat by gently rubbing between the fingertips and thumbs, continuing until the mixture resembles coarse breadcrumbs.
Salmonella	A common bacterial disease that affects the intestines. Humans become infected most frequently through contaminated water or food such as chicken and eggs
Shortcrust pastry	Crumbly pastry made with flour, fat, and a little water, typically used for pies, flans, and tarts
Shortening	The ability of a fat to produce a characteristic crumbly texture to baked products, i.e. pastry
Stir fry	To cook pieces of meat or vegetables quickly in a small amount of hot oil, moving them around all the time
Vegan	People who do not eat any product produced by an animal, this includes, meat, fish, poultry, dairy, eggs and honey
Vegetarians	People who do not eat meat, fish, poultry and in some cases eggs
Whisking	Blend ingredients together quickly or to incorporate air into ingredients such as egg whites or heavy cream in order to increase the volume of the mixture
Wok	A traditional Asian cooking pot shaped like a large deep bowl with a long and short handle or two short handles on opposite sides



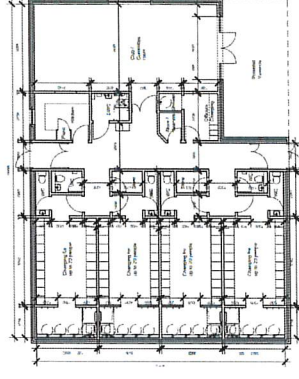
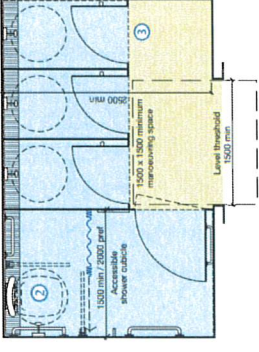
YEAR 9 SPORTS CLUBHOUSE KNOWLEDGE ORGANISER

Keywords	Definition
Water saving measures	Measures such as dual flush toilets, push taps to help reduce the use of water
Scale	The ratio of a distance on the map to the actual distance in real life. The quantitative relation between two amounts showing the number of times one value contains or is contained within the other
Plan view	A view of an object looking straight down on it from above.
Wall	An upright side of a building or room
Window	An opening in the wall or roof of a building or vehicle, fitted with glass in a frame to admit light or air and allow people to see out
Door	A hinged, sliding, or revolving barrier at the entrance to a building, room, or vehicle, or in the framework of a cupboard
Building Symbols	A mark or character used as a conventional representation of elements of a building
British Standards Institute	BSI produces technical standards on a wide range of products and services and also supplies certification and standards-related services to businesses
Sustainability	Avoidance of the depletion of natural resources in order to maintain an ecological balance
Passive design	To design a building to use the planets resources such as the sun, rain and wind to provide energy for the building
Renewable energy	Energy such as wind, solar, biomass, ground source heat pumps used to run a building.
Elevations	A particular side of a building either N/S/E/W
CAD	Computer-aided design (CAD) is the use of computers (or workstations) to aid in the creation, modification, analysis, or optimization of a design
Virtual Model	A digital representation of a physical object

FOOTBALL: Clubhouse



DOORS



Knowledge Organiser

Department: English

Year: 9

Term: 1

Topic: Frankenstein

Themes and Quotations	Assessment, Characters and Form
<p style="text-align: center;">Key themes</p> <p>Ambition/Obsession: Both Walton and Victor aim for major discoveries/ achievements, and risk others' safety and happiness to achieve their goals. Both seem foolishly proud and vain ('hubris') for doing so.</p> <p>Family: Both Walton and Victor aim for major discoveries/ achievements, and risk others' safety and happiness to achieve their goals. Both seem foolishly proud and vain ('hubris') for doing so.</p> <p>Death/The Visceral: Body parts, horror, gore – physical deformities, the use of drugs, medicine etc. The De Lacy family reacts to seeing the Creature with horror due to his appearance. Victor is disgusted by his creation, and by his attempts to create a female companion.</p> <p>Man vs God: Both Victor and Walton talk of 'conquering' nature with science, rather than exploring or enjoying it. This emphasises their ambitions and risk-taking natures. Victor's main goal in the novel is to 'cheat death' – to create life. The link to Prometheus is important as it foreshadows the danger of 'playing God' and implies that such a lofty goal is dangerously ambitious.</p> <p>Revenge: Both Victor and the Creature feel wronged and seek revenge even at the cost of their own safety, health and happiness. The Creature seeks revenge by hunting down Victor, the 'father' figure who he loves. Victor sacrifices his own life to kill the Creature, after his family and friends die.</p> <p style="text-align: center;">Key Quotations</p> <p>Ambition:</p> <ul style="list-style-type: none"> • "deeply smitten with the thirst for knowledge" (Victor) • "You seek for knowledge and wisdom as I once did." (Victor) • "One man's life or death were but a small price to pay for the acquirement of the knowledge..." (Walton) <p>Family:</p> <ul style="list-style-type: none"> • "My parents were possessed by the very spirit of kindness and indulgence!" (Victor) • Elizabeth described as "The innocent and helpless creature bestowed on them by heaven". • Also described as 'Saint', 'angel'. (Victor) <p>Death/The Visceral:</p> <ul style="list-style-type: none"> • "His yellow skin scarcely covered the work of muscles and arteries beneath: his hair was of a lustrous black and flowing; his teeth of a pearly whiteness; but these luxuriances only formed a more horrid contrast with his watery eyes, that seemed almost of the same colour as the dun-white sockets in which they were set, his shrivelled complexion and straight black lips." (Victor) <p>Man vs God:</p> <ul style="list-style-type: none"> • "I ought to be thy Adam but I am rather the fallen angel" (Creation) <p>Revenge:</p> <ul style="list-style-type: none"> • "I gazed on my victim, and my heart swelled with exultation and hellish triumph;" (Creation) • "If I cannot inspire love, I will cause fear." (Creation) 	<p style="text-align: center;">Key Characters</p> <p>Robert Walton- A young, ambitious English man leading an expedition to the North Pole. Confident of his own power to 'play god' and conquer nature. Sometimes lonely on his journey (echoing the Creature's loneliness later on).</p> <p>Victor Frankenstein- Protagonist. Wealthy, and from a happy family. Loves science and his adopted sister Elizabeth. Very ambitious. Brave, bold, selfless ambitions: He begins with a worthy aim: 'if I could banish disease from the human frame and render man invulnerable to any but a violent death!' These soon become selfish: he explains his desire to "penetrate into the recesses of nature" and "it was the secrets of heaven and earth that I desired to learn."</p> <p>Victor's family- Alphonse (father), Caroline (mother), William (brother), Elizabeth (adopted sister), Justine Moritz (servant).</p> <p>Henry Clerval- Victor's best friend. Henry takes care of Victor (nursing him back to health) and Victor feels shame/guilt at hiding his secrets from Henry.</p> <p>The De Lacy Family- Parisians turned rural farmers. They are poor but kind, loving and good. The creature learns to speak and learns about humans watching the family. He feels the joy of friendship and of helping others. His sadness is all the more acute when they see him and reject him.</p> <p>The Creature/Creation- Created by Victor as an experiment made from parts selected for their size, strength and beauty, the beautiful features create an overall grotesque appearance. Terrifying to others because of his appearance, the Creature is alone and frightened when born. He learns about humans by spying on the De Lacy family, but is rejected by everyone he meets. He longs for a father or God figure, but after being rejected by Victor, he is angry and vengeful.</p> <p style="text-align: center;">Form and Structure:</p> <ul style="list-style-type: none"> • Epistolary Novel- a novel written in the form of letters. This allows the author to establish the narrative point of view clearly (who is telling us the story) and change it at different times (eg. When Robert Walton writes, or when Victor writes). It also allows the character to reflect on events as they re-tell them. • Framed Narrative- A narrative within a narrative. Eg. We start and end with the story of Robert Walton. Within that, and for most of the novel, we follow the story of Victor Frankenstein. Within that, we also have the story of the Creature! This firstly allows us to see events from different perspectives. It also allows the characters in the 'outer' layer to reflect on the moral/point of the inner stories. • Foreshadowing- This is when an event, word etc gives the reader a hint about what will happen in the future

Key Words

Abrasion (or Corrosion) - This is where rocks and pebbles that are carried along by the waves are scraping away the surface of the land.

Arch - The curved outline left when the sea erodes the inside of a cave away.

Attrition - The rocks and pebbles that are transported by wave action knock together and become smaller, more rounded and smoother.

Bay - A smooth curve of coast between two headlands

Backwash - The water rolling back into the sea away from the shore.

Beach - An area of sand or small stones, deposited by waves.

Coast - Where the land meets the sea.

Coastal defences - Barriers to protect the coast from erosion or flooding.

Cliff Retreat - The term given to the movement of a retreating cliff over time due to the actions of erosion.

Dissolution (or Corrosion) - The water can dissolve soluble material from rock.

Deposit - To drop material: waves deposit sand and small stones in sheltered parts of the coast, forming beaches due to a reduction in energy.

Economic - To do with finance(money), and jobs.

Erosion - The wearing away of rock, stones and soil by rivers, waves, the wind and glaciers.

Exports - Things a country sells to other countries.

Fetch -The length of water the wind blows over, before it meets the coast.

Geology - The study of rocks and their structure

Groynes - Barriers of wood or stone down a beach, to stop sand being washed away.

Headland - Land that just out into the sea.

High tide - When the sea has reached its highest level.

Hydraulic Action - Where the force of the water wears away the rock exploiting its joints in the cliff face.

Impermeable - Material through which water cannot travel.

Infiltration - When water soaks into the soil.

Imports - Things that are bought in from other countries.

Longshore drift - How sand and other material is carried parallel to the shore, by the waves.

Ocean currents - Currents of water in the ocean, that are warmer or colder than the water around them.

Prevailing wind - The wind that blows most often. (in the UK it is a SW wind)

Saltmarsh - A low-lying marshy area by the sea, with salty water from the tides.

Saturated - Pores in the soil are full of water so no more water can flow through.

Shingle - Small pebbles.

Social - About people and society.

Spit - A strip of sand or shingle in the sea.

Stack - A pillar of rock left standing in the sea when the top of an arch collapses.

Swash - The water that rushes up the sand toward the shore.

Stump - The remains of an eroded stack.

Sustainable - Can be carried on without harming people's quality of life, or the economy or the environment.

Key Learning Concepts/Facts

Tidal range - The fall in sea level, due mainly to the pull of the moon.

Traction - Large boulders and rocks are rolled along the shoreline.

Transportation - Process by which water can carry material using energy derived from its rate of flow.

Waves - Caused by the wind dragging on the surface of the water. The greater the distances between land the greater the wave size and different wave types are created.

Constructive waves - Build up beaches by depositing material.

Destructive waves - Erode the coastline and affect the shape of the land.

Wave-cut Notch - A notch cut in a cliff face by the action of waves.

Wave-cut platform - The flat rocky area left behind when waves erode a cliff away.

Weathering - The breaking down of rock in situ: caused by weather.

Year 9 - Term 1 KO - '1900 was the dawn of a Golden Age'



Skills and vocabulary

Conceptual focus:
Empathy

When taken together both sources allow an historian to understand...

Fundamental (if it laid the foundations for something)

Crucial (If without it, things would not have happened in the same way)

Critical (might play a small part but ultimately an important part in causing change or leading to a different outcome)

A.R.K. - Source and Interpretation analysis structure

I.D.E.A. - Paragraph structure for medium and extended writing

Significant events

Seebohm Roundtree	Social reformer who carried out research in York 1899-1901. He found that over 30% of the population were living in abject poverty.
Charles Booth	Wrote a series of reports entitled 'Life and Labour of the People of London' which provided proof of the link between poverty and illness and death.
Women's Suffrage	Both the Suffragists (Peaceful) and the Suffragettes (militant) campaigned for the right to vote in political elections.
Hunger Strike from 1903 onwards	After the failure of the Liberal Government to approve the right of women to vote and instead have them arrested for their violent acts, many Suffragists went on hunger strike in prison in further protest at their treatment.
Cat and Mouse Act 1913	The Liberal Government passed the act which meant Suffragettes, nearing starvation on hunger strike would be released from prison only to be re-arrested at a later date once they had recovered.
Force Feeding	Imprisoned suffragettes on hunger strike were sometimes force fed. Being force fed involved a rubber tube being inserted into the throat or nose and liquidised food being poured in.
Reforms introduced by the Liberal Government (Influenced by Seebohm Roundtree and Charles Booth's reports into social conditions).	<p>1906 - Free School Meals</p> <p>1907 - special schools to teach young women about bringing up children.</p> <p>1908 - Children's Charter to protect children's rights.</p> <p>1908 - Old Age Pension introduced.</p> <p>1909 - Labour Exchanges (job centres) set up.</p> <p>1909 - National Insurance Act - provided sick pay and health care for workers.</p>

Key terms:

Boycott	A protest involving refusing to do something e.g. not buying a specific product or attending a specific event.
Equality	Being treated equally in status, rights and opportunities.
Assembly Line	A system using workers and machines in a factory to make goods in stages.
Diversity	the practice or quality of including or involving people from a range of different social and ethnic backgrounds and of different genders, sexual orientations, etc
Militancy	Aggressive and violent behaviour in pursuit of a political cause, favouring extreme or confrontational campaign methods.
Domestic Service	Domestic service , the employment of hired workers by private households for the performance of tasks such as housecleaning, cooking, child care, gardening, and personal service.
National Insurance	Money collected to pay for workers sick pay and medical care. Today it helps fund the NHS.
Angel of the Home	The view that women's roles were as mothers and wives, running the home for their husbands.
Censorship	Limiting access to information, ideas or books in order to prevent knowledge.
Propaganda	False or misleading information used to spread a certain point of view.
Public Health	The health and well being of the public as a whole, in a particular time and place.
Social Reformer	Someone dedicated to changing and improving society by tackling issues such as poverty, inequality and racism.

Key question: Were the early 1900s a 'Golden Age' for everyone?

WGSB Year 9 French Knowledge Organiser Term 1

Online

je vais sur Facebook I go onto Facebook
 je lis mes messages I read my messages
 je poste des photos I post photos
 je modifie mes préférences I update my preferences
 j'invite mes copains I invite my friends
 je fais des quiz I do quizzes
 je joue à des jeux I play games
 je commente des photos I comment on photos
 Je télécharge I download
 je passe des heures en ligne I spend hours on line
 j'organise des sorties I organise to go out
 je partage des photos I share photos
 je fais des achats I make purchases
 je fais des recherches I do research
 je regarde des clips vidéo I watch video clips
 j'envoie des e-mails I send e-mails
 je vais sur des blogs I go on blogs
 je regarde des films I watch films

Relationships (describing someone)

je le trouve I find him
 je la trouve I find her
 je pense qu'il est I think that he is
 je pense qu'elle est I think that she is
 je pense qu'il n'est pas I think that he isn't
 je pense qu'elle n'est pas I think that she isn't
 elle peut être she can be
 il peut être he can be

 arrogant(e) arrogant
 beau/belle good looking
 charmant(e) charming
 drôle funny
 égoïste selfish
 généreux/généreuse generous
 jaloux/jalouse jealous
 joli(e) pretty
 lunatique moody
 pénible a pain, annoying
 timide shy

Opinions (of activities)

c'est it is
 ce n'est pas it is not
 c'était it was
 ce sera it will be

 génial great
 intéressant interesting
 marrant funny
 romantique romantic
 sympa nice
 affreux awful, terrible
 bizarre weird
 nul rubbish
 un désastre a disaster

d'après moi according to me
selon moi according to me
Catégoriquement categorically
fermement firmly
tandis que whereas



Free Time – past

j'ai bavardé I chatted
 j'ai bu du coca I drank coke
 j'ai fait les magasins I did shopping
 j'ai fait une promenade I "did" a walk
 j'ai fait un piquenique I did a picnic
 j'ai joué au bowling I played bowling
 j'ai mangé un hamburger I ate a hamburger
 j'ai regardé un film I watched a film
 j'ai bien rigolé I had a laugh
 j'ai dansé I danced
 je suis allé(e) au cinéma I went to the cinema
 je suis allé(e) en ville I went into town
 je suis allé(e) à une fête I went to a party
 je suis sorti(e) avec mes amis I went out with my friends
 je suis resté(e) à la maison I stayed at home

Key Verbs

Je regarde - I watch
 J'ai regardé - I watched
 je regardais - I used to watch
 Je vais regarder - I am going to watch
 Je voudrais regarder - I would like to watch

 Je vais - I go
 Je suis allé - I went
 J'allais - I used to go
 Je vais aller - I'm going to go
 Je voudrais aller - I would like to go

Free Time - future

je vais I am going
 il/elle/on va he/she/one is going
 nous allons we are going
 j'ai l'intention de I intend
 je compte I plan
 j'espère I hope
 j'ai hâte de I can't wait

 aller au cinéma to go to the cinema
 aller en ville to go into town
 aller à la patinoire to go to the ice rink
 aller à une fête to go to a party
 faire les magasins to do shopping
 faire un piquenique to do a picnic
 bavarder to chat
 faire une promenade to go for a walk
 jouer au bowling to play bowling
 manger un hamburger to eat a hamburger
 regarder un film to watch a DVD
 bien rigoler to have a laugh
 danser to dance
 rester à la maison to stay at home
 sortir avec mes amis to go out with my friends

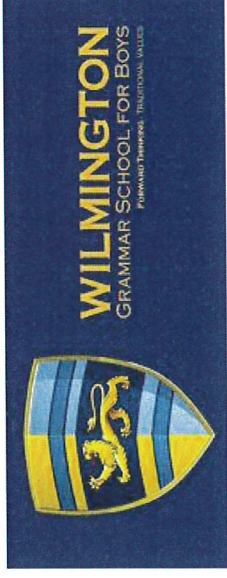
Past tense with avoir

j'ai bavardé I chatted
 tu as bavardé you chatted
 il/elle/on a bavardé he/she/we chatted
 nous avons bavardé we chatted
 vous avez bavardé you (pl) chatted
 ils/elles ont bavardé they chatted

Past tense with être

je suis allé(e) I went
 tu es allé(e) you went
 il/elle/on est allé(e) he/she/one went
 nous sommes allé(e)s we went
 vous êtes allé(e)s you (pl) went
 ils/elles sont allé(e)s they went

WGSB Year 9 Spanish Knowledge Organiser Term 1



Online

leo y escribo correos I read and write email
descargo música I download music
navego por internet I surf the internet
juego I play
chateo I chat
hago mis deberes I do my homework
veo películas I watch films
compro regalos I buy gifts.

TV and Cinema

un programa de música a music program
un programa de deporte a sports program
un programa de tele-realidad a reality TV show
un concurso a quiz show
un documental a documentary
una comedia a comedy
una serie de policías a police series
una telenovela a soap
el telediario the news
las películas de amor a romantic film
las películas de acción an action film
las películas de terror a horror film
las películas de ciencia-ficción a sci-fi film
las películas de guerra a war film
los dibujos animados an animation film

Music

Suelo escuchar ... I usually listen
escucho ... sometimes I listen
la música clásica classical music
la música latina latin music
la música electrónica electronic music
la música pop/hip hop/rap pop/hip hop/rap music
la música de los años sesenta 70s music

Opinions (films/tv shows)

me gustan (las películas de acción) I like
me encantan I love
me interesan I'm interested in
prefiero ... I prefer
no me gustan I don't like
odio ... los concursos I hate quiz shows
porque son ... because they are
emocionantes exciting
divertidos/as entertaining
interesantes interesting
educativos/as educational
informativos/as informative
aburridos/as boring
malos/as bad
tontos/as stupid
guay cool

Time Phrases

todos los días every day
dos veces a la semana twice a week
por las tardes in the evenings
tres horas al día three hours a day
de vez en cuando from time to time
los fines de semana at weekends
a veces sometimes
nunca never
ayer yesterday
anteayer the day before yesterday
el viernes pasado last Friday
la semana pasada last week
el fin de semana pasado last weekend
primero first
luego next/then
después afterwards



también also
además furthermore
sin embargo however
eso dicho that said
diría que I would say that
dado que given that



Key Verbs

descargo I download
descargué I downloaded
descargaba I used to download
me gustaría descargar I would like to download
me gusta ver I like to watch
vi I watched
me gustaba ver I used to like to watch
me gustaría ver I would like to watch

Key Words	Topics	Essential knowledge
<p>Catholic: A branch of Christianity, based in Rome and led by the Pope.</p> <p>Orthodox: A branch of Christianity, Practised in Eastern Europe.</p> <p>Protestant: Christians who protested the practices of the Catholic Church.</p>	<p>The Nature and Quality of God:</p> <ul style="list-style-type: none"> • Christianity is the main religion in Great Britain. • It has 3 main denominations: Roman Catholic, Church of England and Orthodox. • Christianity is a monotheistic religion. • Meaning that Christians believe in one Supreme Being, God. • Christians believe that God is omnipotent, benevolent, and just. • All these qualities have led to the questioning of God’s qualities. • The problem of evil and suffering has been used to challenge the belief in God and his qualities. 	<p>The Problems of evil and suffering challenges the belief in these qualities.</p> <ul style="list-style-type: none"> • If God is benevolent, why does God allow people to suffer, and to hurt others? • If God is omnipotent, why does God not prevent evil and suffering?
<p>Denomination: A distinct group within the Christian faith.</p>	<p>The Oneness of God and the Trinity:</p> <ul style="list-style-type: none"> • Christians believe there are three persons in the one God. • Each person of the trinity is fully God. The persons of the Trinity are not the same. • God is understood by Christians as a relationship of love between Father, Son, and Holy spirit. 	
<p>Omnipotent: Almighty, having unlimited power, all-powerful.</p>	<p>Different Christian beliefs about Creation:</p> <ul style="list-style-type: none"> • Christians believe in creation by God, the act by which God brought the universe into being (Genesis 1:1-3). • The Word, God the Son, or Jesus was active in the creation (John1:1-3). • The holy Spirit was active in the creation (Gen 1:1-3) • The Trinity, therefore, existed from the beginning and participated in the creation. 	
<p>Benevolent: All -loving, all good God</p>	<p>The incarnation and Jesus, the Son of God:</p> <ul style="list-style-type: none"> • Christians believe that Jesus was God in human form, a belief known as the incarnation. • Christians believe that Jesus was the Son of God, one of the persons of the Trinity. • Christians believe that Jesus is the Messiah, but a spiritual rather than a political one. 	
<p>Justice: Bringing about what is just and fair according to the law.</p>	<p>The Crucifixion:</p> <ul style="list-style-type: none"> • Jesus was sentenced to death by Pontius Pilate, a death by crucifixion. • Jesus forgave those who crucified him and promised one of the men crucified with him that he would join God in paradise. • Jesus’ body was buried in a cave-like tomb. 	
<p>Trinity: The belief that there are three persons in the One God: God the Father, God the Son, and God the Holy Spirit.</p>	<p>The resurrection and ascension:</p> <p>The gospel says that after Jesus died and was buried, he rose from the dead. The ascension took place after his resurrection, and he returned to God the Father in heaven.</p> <p>Resurrection happened three days after crucifixion. Ascension happened forty days after resurrection.</p>	
<p>The Word: The term used at the beginning of John’s gospel to refer to God the Son.</p>		
<p>Incarnation: Becoming flesh taking Human form.</p>		
<p>Resurrection: Rising from the dead.</p>		
<p>Blasphemy: A religious offence which includes claiming to be God.</p>		
<p>Crucifixion: Roman method of execution by which criminals were fixed to a cross.</p>		
<p>Ascension: The event, 40days after the resurrection, when Jesus returned to God, the Father, in heaven.</p>		

Knowledge Organiser

Department: Biology

Year: 9

Term: 1

Topic: Chapter 1 (B1.2)

Key Words

Word	Meaning
Genes.	Short sections of DNA that code for a characteristic, such as eye colour
nucleotides	Monomer (unit) found in DNA, consisting of an organic base, ribose sugar, and a phosphate group
Polymer	Substance made up of many monomers (similar subunits) bonded together.
Monomer	single units, such as sugar molecules, that join together in a long chain to form a larger molecule (polymer), e.g. cellulose.
complementary base pairing	The pairing of the bases between two strands of DNA -adenine with thymine, and guanine with cytosine
messenger RNA	Copy of DNA strand used to carry the genetic code out of the nucleus so that proteins can be synthesised.
Chromosome	thread-like structures of DNA in the cell nucleus
transcription	Process by which mRNA is formed by the unzipping of the DNA molecule around the gene and copying it to mRNA in the nucleus.
Proteins	A large molecule synthesised from amino acid monomers.
translation	Translating the mRNA sequence to an amino acid sequence during protein synthesis
enzyme.	Biological catalyst -this means it speeds up reactions without being used up.
active site.	Part of the enzyme which is specific to the substrate and has a complementary shape to it.
substrate.	the protein or reactant in an enzyme-controlled reaction that fits exactly into the active site of a specific enzyme
lock and key hypothesis.	a model to explain how enzymes work; the substrate is the 'key' and the active site is the 'lock'
denatured.	when an enzyme's shape changes so that the substrate cannot fit into the active site
Protein synthesis	process in which polypeptide chains are formed from coded combinations of single amino acids inside the cell.
Amino acid	small molecules that make up a proteins.
DNA	Biological polymer made from nucleotide monomers. The sequence contains all the information needed to make an organism.
Genetic code	a sequence of three DNA bases that codes for a single amino acid

Key Learning Concepts/Facts

DNA stands for deoxyribonucleic acid

It is a double helix made from 2 strands that have twisted around each other. It is a polymer, meaning that it is made of many different molecules that join up to make a long strand: in the case of DNA these molecules are called nucleotides. Each nucleotide is made from one sugar molecule, one phosphate group (which forms the backbone) and one of the four different organic bases. o The 4 bases are A, C, G, T. o These nucleotides pair by complementary base pairing, meaning that only certain bases can join together: C joins to G and A joins to T. Each group of three bases codes for an amino acid and these then join together to make a protein. Chromosomes are structures made up of long molecules of DNA.

Protein synthesis

DNA copied into mRNA during transcription → mRNA travels to ribosome → protein made by translation

What are enzymes?

Enzymes are biological catalysts (a substance that increases the rate of reaction without being used up). They are protein molecules and the shape of the enzyme is vital to its function. This is because each enzyme has its own uniquely shaped active site where the substrate binds. A simplified way to look at how they work is the Lock and Key Hypothesis : The shape of the substrate is complementary to the shape of the active site (enzyme specificity) , so when they bond it forms an enzyme-substrate complex. Once bound, the reaction the reaction takes place and the products are released from the surface of the enzyme

Factors affecting the rate of enzyme-controlled reactions:

The rate of reaction increases with an increase in temperature up to this optimum, but above this temperature it rapidly decreases and eventually the reaction stops. When the temperature becomes too hot, the bonds in the structure will break This changes the shape of the active site, so the substrate can no longer fit in. The enzyme is said to be denatured and can no longer work.

Other factors include pH, Substrate concentration and Enzyme concentration

Knowledge Organiser

Department: Biology

Year: 9

Topic: Chapter 1 (B1.1 & B1.2)

Term: 1

Key Learning Concepts/Facts

Key Words

Word	Meaning
Magnification	the factor by which an image of an object is enlarged by a microscope; calculated as: size of image/size of real object
Micrographs	image captured using a microscope
resolving power (Resolution)	the ability of a microscope to distinguish between two points
Chloroplast	a cell structure found in green plants that contains chlorophyll
Chlorophyll	pigment found in plants which is used in photosynthesis (gives green plants their colour)
Vacuole	a space within a cell that is empty of cytoplasm, lined with a membrane, and filled with cell sap
Chromosome	thread-like structures of DNA in the cell nucleus
Eukaryote	an organism whose cells contain a nucleus surrounded by a membrane
scale bar	a line drawn on a micrograph used to measure the actual size of the object
Mitochondria	organelle in the cytoplasm important for cell respiration
Ribosomes	structures in a cell where protein synthesis takes place
prokaryotic cell	unicellular organism that lacks a membrane-bound nucleus, mitochondria, or any other membrane-bound organelle
eukaryotic cell	cells that contain a true nucleus in the cytoplasm e.g. plant and animal cells
Prokaryote	single-celled organism which has neither a distinct nucleus with a membrane nor other specialized organelles
Plasmid	small ring of DNA found in prokaryotic cells
electron microscope	a microscope of extremely high power that uses beams of electrons focused by magnetic lenses instead of rays of light
scanning electron microscope	works by bouncing electrons off the surface of a specimen that has had an ultrathin coating of a heavy metal
transmission electron microscope	uses an electron beam to view thin sections of cells at high resolution
standard form	way of writing very large or small numbers using powers of ten; e.g. 1.0×10^{-3}
Light microscope	uses focused light and lenses to magnify a specimen, usually a cell

Light (optical) microscopes

The specimen is placed onto a slide, which is a thin piece of glass. Sometimes if the specimen is colourless then a stain is needed to identify the organelles. Another small piece of glass called a cover slip is placed on top to protect the lens. It is mounted onto the stage of the microscope and the lamp at the bottom of the microscope shines constant light on the slide so that the specimen can be viewed. The objective lens is found closest to the specimen and magnifies the image, which is then further magnified by the eyepiece lens.

When working with calculations in microscopy, it is common to come across very large or small numbers. Standard form can be useful when working with these numbers.

Advantages of light microscopes: Relatively cheap, Can be used in the field, Does not require specialist training, Can look at living specimens.

Disadvantages of light microscopes: Low resolution (200nm) as limited by the wavelength of visible light, Low magnification strength (x1500), Staining is required for some organelles to present.

Electron microscope

Electron microscope uses electrons, instead of light, to form images. Electrons have a much smaller wavelength than that of light waves and so allows scientists to view smaller subcellular structures, such as mitochondria and ribosomes. There are 2 types: SEM = **Scanning Electron Microscope**, Creates 3D images at a lower resolution, 10nm resolution and x100,000 magnification
TEM = Transmission Electron Microscope; Creates 2D images detailing organelles at a much higher resolution, 2nm resolution and x500,000 magnification.

Advantages: Can see very small organelles, Can produce 3D images (SEM),
Disadvantages: Samples need to be placed in a special vacuum so cannot look at living specimens, Extremely expensive, Very large so cannot be moved easily, Requires specialist training and skill.

Subcellular structures: In eukaryotic cells: Nucleus, Cytoplasm, Cell membrane, Mitochondria, Ribosomes. Only in plant cell; Chloroplasts, Permanent vacuole, Cell wall.

In prokaryotic cells (e.g. bacteria): Cell wall, Single circular strand of DNA, Plasmids

Knowledge Organiser

Department: Chemistry	GCSE Separate Sciences
Term:	Topic 1: Particles

Key Words	Key Learning Concepts/Facts
<p>Study online at https://quizlet.com/_310ntz</p> <ul style="list-style-type: none"> ➤ atomic number: the number of protons found in the nucleus of an atom ➤ boiling: a physical process turning a liquid to its gaseous state by raising the temperature above its boiling point ➤ changes of state: the processes of changing a substance from solid to liquid and from liquid to gas, and also the reverse of these processes ➤ charge: a property of matter, can be positive or negative, which attract each other ➤ condensation: the process of turning gas to liquid ➤ decimal point: the point separating whole numbers from the value indicating the amount of 1/10ths or 1/100ths represented ➤ deposition: a physical process turning a gas directly to its solid state ➤ diameter: the length of the largest line across a circle, the line goes through the midpoint. The maximum width of a sphere. ➤ electron: negatively charged subatomic particle with negligible mass ➤ electron shell: an area around the nucleus which will probably hold electrons. It is not a physical 'hard ring' but a model of an area where electrons may be 'found'. An energy level ➤ Ernest Rutherford: a Nobel Laureate scientist working in Manchester and Cambridge who proposed that the atom had a nucleus with electrons surrounding it and that the atom was mostly empty space ➤ Geiger and Marsden experiment: an experiment using the scattering of alpha particles on gold leaf that showed that some particles were deflected by a concentrated charge leading to the idea of an atom with a nucleus ➤ isotope: atoms with the same number of protons but different numbers of neutrons ➤ J.J. Thomson: discovered the electron and suggested the plum 	<ul style="list-style-type: none"> ➤ Three states of matter – The particle model represents the states of matter with the particles as small solid spheres where: in a solid particles are tightly packed into a regular arrangement of rows to form a fixed shape; in a liquid the particles are all touching, but randomly arranged and able to slide past each other to take up different shapes; in a gas the particles are spread out as far apart as possible to fill the container (p.14). ➤ Limitations of the particle model – The model described above is limited as particles such as molecules are not solid spheres and would have forces of attraction between particles, that get weaker from solid to liquid to gas, which are not represented in the model. ➤ Changes of state – The state of matter a substance is in will depend on the strength of the forces between particles and its temperature. When the temperature is below the substances melting point it will be in the solid state. Heating the substance above its melting point will melt it into a liquid or even cause it to sublime and turn directly into a gas. A substance will be in the liquid state when at a temperature above its melting point but below its boiling point. Heating a liquid above its boiling point will cause it to boil and turn from the liquid state to a gas. Cooling a liquid below its melting point will cause it to freeze into a solid. If a gas is cooled below its boiling point it will condense into a liquid again, or may even undergo deposition and turn directly into a solid (p.15). ➤ Changing ideas about atoms – The model of the atom has changed significantly over time and you must be able to describe the contributions of each scientist (see the Key Words, right for detail on each): Dalton, J.J. Thomson, Geiger and Marsden, Ernest Rutherford, Niels Bohr and James Chadwick (p.16-17). ➤ Modelling the atom – The modern model of the atom is a tiny positively charged nucleus surrounded by negatively charged electrons (p.18) ➤ Sizes of particles and orders of magnitude – 'Order of magnitude' essentially refers to where the decimal point is, if something is an order of magnitude bigger, the decimal point moves to the right, the value is ten times bigger. Chemists often deal with very large or small numbers because atoms are incredibly small. Standard form and orders of magnitude are used to describe these numbers clearly, for example, a typical atom has a radius of 0.0000000001m, this is much easier to express as 1×10^{-10} m. A typical nucleus is four orders of magnitude smaller again at 1×10^{-14} m (p.19-21). ➤ Subatomic particles – Thanks to the work of the scientists described

Knowledge Organiser

- pudding model of an atom
- **James Chadwick:** discovered the neutron
- **John Dalton:** suggested that atoms were small particles like billiard balls
- **magnitude:** size of something
- **mass number** – the combined total number of protons and neutrons in the nucleus of an atom
- **nanometre:** units used to measure very small things (one billionth of a metre)
- **negligible** – so small that it is not significant, essentially zero
- **neutral** – having no overall charge
- **neutron:** small particle which does not have a charge found in the nucleus of an atom
- **Niels Bohr:** proposed that electrons orbit the nucleus in fixed orbits called shells
- **nucleus:** central part of an atom that contains protons and neutrons
- **proton:** small positive particle found in the nucleus of an atom
- **radius:** a straight line from the centre to the circumference of a circle or sphere
- **relative atomic mass:** the average mass of an atom compared to 1/12 of a carbon-12 atom
- **standard form:** a way of writing a very large number with one number before the decimal point, multiplied by a power of 10
- **sublimation:** a physical process turning a solid directly into its gaseous state
- **symbol:** a way of representing elements. It consists of one or two letters

above, we know that atoms are made up of smaller particles. We called these *subatomic*, as they are smaller than the atom. The nucleus is positively charged, because it contains protons, which each have a relative charge of +1. The nucleus also contains a subatomic particle with no relative charge, a neutral particle called the neutron. Both protons and neutrons have a relative mass of 1. Electrons orbit the nucleus at set distances we call shells. Each electron has a very small mass. The relative mass of an electron is 0.0005 (or more closely 1/1836), so small we describe this as *negligible*. Electrons have a relative charge of -1 and atoms have equal numbers of protons and electrons, giving them no overall charge. Because electrons are on the outside of an atom, they can be transferred between atoms, causing the number of protons and electrons to become unbalanced. When this happens an ion is formed (p.22-23).

➤ **Atomic number, mass number and isotopes** – The number of protons determines what type an element is as so is described as the *atomic number*. Atoms contain different numbers of particles and so have different masses. As the mass of the electrons is negligible the *mass number* of an atom is the combined number of protons and neutrons. If atoms have the same number of protons (*atomic number*), so are the same element, but a different number of neutrons, so a different *mass number* they are described as *isotopes* of each other. Some isotopes are more common than others and to describe this we give their *relative abundance* – the percentage of atoms that are that version. To work out the *relative atomic mass* of an element we need to work out the average mass of atoms of that element. If we multiply the abundance by the mass of each isotope and add the values together, we can find the average (p.24-25).

Knowledge Organiser

Department: Physics Triple

Topic: electricity

Key Words		By the end of this unit you will need to be able to: (page numbers relate to the textbook available on teams)
A material that allows an electric charge to flow through it	Conductor	<p>Explain what static electricity is, describe how insulating materials can be charged and the uses and dangers associated with static electricity. P102-103</p> <p>Recognise and use electric circuit symbols in circuit diagrams and explain electric charge and currents. P103-104</p> <p>Explain current pass around a circuit and what charge is. P103-104</p> <p>Explain what resistance is and describe Ohms law. P106-107</p> <p>Describe the differences in series and parallel circuits. P108-109</p> <p>Explain how resistance changes in electrical components, (Filament lamps, LDR's, Thermistors, Diodes) and draw the V-I graphs for each. P110-111, 116-117</p> <p>Describe energy transfers and power. P118-119.</p> <p>Be able to calculate power. P120-121</p> <p>Understand the difference between AC and DC. P286-287</p> <p>Know how a plug is wired and the function of a fuse. P286-287</p>
Circuit in which all components are connected one after the other in a single line	Series circuit	
Component with high resistance in one direction and low in the other	Diode	
The electrical connection between the metal case of an electrical appliance and the ground	Earth wire	
The rate of flow of electric charge	Current	
A wire in a plug designed to melt if there is a surge of current	Fuse	
Ration of voltage across a component to the current through it	Resistance	
A material that reduces the flow of electric charge	Insulator	
A component whose resistance is affected by temperature	Thermistor	
Conducting connection that carries electricity from the supply	Live wire	
The rate at which energy is transferred	Power	
A bulb with a thin piece of wire that is heated and gives out light	Filament bulb	
Unit of energy	Joule	
Wire in a plug that allows electricity to return to its source	Neutral wire	
Unit of power	Watts	
Measure of the energy transferred per unit charge as it moves between two points in a circuit	Potential difference	
A relationship which produces a straight line graph that passes through the origin	Directly proportional	
Unit for electric charge	Coulomb	
A property of some particles given the symbol Q	Charge	
A circuit in which the current divides into two or more paths	Parallel circuit	
Equations for this chapter – these all need to be learnt for the exams		
Charge flow = current x time		
Potential difference = current x resistance		
Energy transferred = current x potential difference x time		
Power = potential difference x current		
Power = (current) ² x resistance		
Power = energy transferred / time		
Energy transferred = power x time		